GREEN AUDIT

Report (2022-2023)

Prepared by

DEPARTMENT OF BOTANY

SIR C R REDDY COLLEGE FOR WOMEN, ELURU
(Affiliated to ADIKAVI NANNAYA UNIVERSITY, Rajamahendravaram)

ELURU, ELURU Dist. Andhra Pradesh 534007

Audited by

DIVISIONAL FOREST OFFICE SOCIAL FORESTRY DIVISION
ELURU

U.G BLOCK FRONT VIEW

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About college

Sir. C. R. Reddy college for women established in the year1987 by Sir. CATTAMANCHI RAMALINGA REDDY. The educational society is one of the premier institutes affiliated to AKNU-Rajahmundry. keeping in view the vast changes in the industrial services sector, and the recent focus of technical education has been on innovation, research and development along with major changes in the curriculum and strategies of the institution was established in spite of stiff competition However this institute is trying to cope up with this change and trying its level best to take strategic steps for improvement in this regard.

In cognizant of the above this institution aims to be a leader in technical and management education in the area of West Godavari district and states a whole and to earn a unique identity for the development of high quality knowledge resources and diversification of teaching UG,PG and management education

In view of the above the management felt the immense significance of certification by the UGC . Hence the proposals for 2(f) status for this proactive institution.

GOALS

- To be among top5 colleges of A.P in the next 5Years.
- To be an institute with a focus on student concentric activities where academic is followed with utmost passion and sincerity
- To provide the high quality resource and infrastructure in the next 5years
- To strengthen relationships with leading industries and organizations /institutions.

Objectives

- To attract and retain highly qualified, talented and motivated staff
- To focus not only on quality education but on total quality management in Sir C.R .Reddy college for women
- To design and develop a digital ecosystem to collaborate communication and connect with stake holders
- To introduce and implement innovation in T-L processes to strengthen academic delivery.

Divisional Forest officer,Social Forestry Division Eluru

Dt : 26-05-2023

CERTIFICATE

(For Green cum Environment Audit)

This is to certify that Green Audit at Sir C R Reddy College for women was conducted on 26th May 2023

The institution has submitted necessary data and credentials for scrutiny. It is found that Sir CRRCW is with rich flora (sixty seven families) and the college has 100% rain water of roof recharging soil and is helping in maintaining in the campus underground water table

The activities and measures carried out by the college has been verified and the effort taken by the college towards environment and sustainability is highly appreciated and commendable

Valid till
25th May 2024

DIVISIONAL FOREST OFFICER
Divisional Forest Officer
Social Forestiy Division
ELURU
26th May 2023

Chapter1

Introduction

Green audit

The Green audit process was begun in the 1970s with the intention of identifying the activities carried out in a given institution or company.This was initiated against the background of growing concern over the changing climate and related aspects.Green audit is a tool to identify the range of environmental impacts and assess the compliance of the operations on the development and regular activities within an organization.It may also assess the compatibility of the operations within an organization or a company with existing applicable laws and regulations and the expectations of the in various stake holders. It further assesses the possible implications and effect of pollution due to the operations within the organization. The audit also seeks to identify possible means and methods to save investments, work quality, improve the health and safety of their employees, reduce liabilities and reduce the rate of environmental pollution .A continuous process of such audit might result in maintaining the quality of these aspects with in the premises of any organization.

Most companies, government and non-government bodies and other institutions Conduct green audit aiming

- To ensure that the performance of the institution with respect to environmental activities are involved in, this in compliance with existing laws and regulations.
- To check the functionality and their operating success, including water supply, energy related matters and other similar matters that are related to green operations on the campus
- To formulate or update the institution's environmental policy, if warranted.
- To measure the environmental impact of operational processes related to green activities on the campus.

- To measure the performance of each green related operations and actions on the campus.
- To generate at a base of green activities for continuous monitoring to assess the success of each of them.
- To identify future potential abilities.
- To align the institution's developmental and day to day activities with the state division, mission, strategies ,etc.
- To identify possible ways to reduce expenditure and running costs on equipments, appliances, etc. or try enhance revenue income.
- To improve process and materials efficiency, and in response to take holder requests for increased disclosure.

The process of green audit based on operational activities within an institution happens not necessarily based on laws and regulations. It might be largely based on awareness and concerns on environmental performances within and outside the institute's premises. This further strengthens the fact regarding social responsibilities of the organization. Majority of the institutions that conducted green audits in there cent past has realized the importance of the same as they could easily manage their operational costs and provide good atmosphere to their stakeholders. The green audital so provides opportunities to identify full range of operations within an organization, the impacts of maintaining and functioning of its operational goods and services, the actual source of raw materials for different activities within the organization, the costs of operations of its offices ,functional units, and other facilities. It also provide chances to understand the relationship with employees, material suppliers, stakeholders, etc. The recommendations, findings and suggestions that emerge during green audit would certainly help the management of the organization to set up future action plan that best suits to them.

General steps involved in Green Audit

1. Systematic and exhaustive data collection.
2. Evidence based documentation of activities.
3. Regular monitoring.
4. Provide standards and methods for improvement by establishing cost effective green action plan.

Chapter–2

Sir. C. R. Reddy College for women

Historical Account

Brief History

It was established in the year 1987.The college offers under graduate and Sir.C.R. Reddy College for Women, Vatluru is on among the leading higher education institutions in Andhra pradesh. It has completed 36 years of academic mission. The college post- graduate degrees in the, science and commerce streams .surrounded by agricultural farm lands, it adopts a healthy culture of as well as modern green practices. The campus is surrounded by heterogeneous vegetation with a fair number of shady trees naturally found in the locality.

Geography

The college is situated in Eluru district. Its location coordinates are9°58′38.14″N76°35′46.81″E.the geographical features of undulated land are as tapering in to paddy fields. The raised part of the region provides conducive conditions for the growth of tropical evergreen and deciduous varieties of fruit yielding and other trees.

General Information

The college offers 12 UG programs and 1 PG programme. 12 departments are recognized as research centres. The college has almost 1 6 9 5 students on its rolls in various programs, with girls forming almost 60%. There are 92 teaching staff in the various disciplines. Further, the college has 68 teachers on More than 95% of the members of different faculties are women. About 52 administrative staff members and supporting staff are working in the college office and different departments. The college is tapping various funding sources from different National and State funding agencies such as the University Grants Commission (UGC),

The college is adopting information technology as per the requirements. It also implement advance learning practices and system with ut most care. Digital Library with over 6 some examples for the same. The college publishes a bi-annual journal called The college is adopting information technology as per the requirements. It also implement advance learning practices and system with ut most care. Digital Library with over 65000 titles of various disciplines, UGC sponsored INFLIBNET, etc. are 5000 titles of various disciplines, UGC sponsored INFLIBNET, etc.are

"Science and Society" with ISSN number since 2020. Several endowment lectures inter-disciplinary national seminars and invited talks by experts are some dedications the college shown towards academic excellence

Various clubs and flora such,Entrepreneurship Development Club (EDC),,Eco Club, etc. are actively involved in the development of student capacity and personality.

Different department celebrations, inter-departmental and inter-collegiate competitions, and other celebrations helps the students to perform and sharpen their talents. All UGC, state government and university norms and directions are practiced without fail in the campus. This enables the students to develop their life with multifaceted and systematic activities. Parent Teacher Association (PTA) and Alumni Association play a good role in between the on campus students and society.

There are five air conditioned and well-furnished 2 seminar halls belonging to different departments, 3 computer labs, three smart class rooms, one language lab, about 250 computers with internet access, 1 photocopying machine, 15 DLP Projectors and so on. 3 Ladies' Hostels, Canteen, Post-office, Bank, Gymnasium.

Yoga Centre, Counselling Centre, Book Stall and Stationery Shop are the strength and diversity of the infrastructure of the campus. This indicates that the campus is aligning its resources with advancement in the world of technology and development. This is very much in line with the vision of the college.

A dedicated and well equipped IQAC cell controls the activities that enables the campus to run along the fore runners of academic institutes in AP . The IQAC is well connected with the college management, administrative office, different departments, clubs etc. It also act as a mediator in organising several activities in the campus. Systematic documentation of activities and academics is a characteristic feature of the college. The IQAC cell enables the campus to get accreditations from different accrediting agencies.

2.1. Previous Green Audit

The previous green audit of sir c r Reddy college for women was done during April-May 2022 by. The report of the green audit was a comprehensive evaluation after thorough evaluation of all aspects related to concerned green activities of the campus. It identified the green activities in the campus involving, management, teachers and students. It also identified lacunas in green practices of the campus and recommended a few practices to be implemented for it to become a green campus. The following were the common recommendations posted in the previous audit.

- Adopt an environmental policy for the college.
- Establish a purchase policy towards environmental friendly materials.
- Introduce UGC Environmental Science course to all students.
- Conduct more seminars and group discussions on environmental education
- Students and staff can be permitted to solve local environmental problems.
- Renovation of cooking system in the canteen to save gas.
- Establish water, waste and energy management systems.(see Green Auditing of Sir c r reddy College,2023).

The college has apparently tried their level best to implement these recommendations within the stipulated time period. It also adopted other policies and practices that help them to achieve a green campus. The previous audit also suggested criteria wise recommendations such as water management and energy management. Most of there commendations were dealt with by the campus authority.

2.2. Role of Management in Green Management

The part played by the college management in bringing the campus to a green one is adorable.

The following were the initiatives by the college authorities in green management:

1. The management developed separate teams for implementing green policy in the campus.
2. Regular evaluation system has been established with monitoring cells for green activities in the campus.
3. The management has allotted budget for implementing green policies in the campus.
4. The green monitoring cell evaluates developmental and functional activities and makes recommendations for improvement of the green aspects.
5. These recommendations are implemented without delay and fail.
6. Clubs that are related to green activities are encouraged to conduct programs in and around the campus.
7. The management is keen on the social commitments and tries for each out to the general public through teachers and students.
8. The management is keen in conducting awareness programs based on its green policies.
9. The support and part played by management is vital in the green campus related activities.

Chapter3
AUDIT PREPARATION

3.1. Management

The Sir c.r.reddy College management was very keen in taking up there commendation of conducting a green audit after two years after the previous audit. In the light of this, the college management approached Sacred Heart College, which has a consultancy wing offering services like green audit of institutions. The Divisional forest office eluru agreed to conduct the green audit of Sir c r Reddy college for women College. After this, there was a preliminary visit to the campus to set up different criteria and questions that are necessary for an updated green audit.

The following were different criteria set forth for the present green audit.

a) Green Practices

b) Water Management

c) Energy Management

d) Carbon Footprint

A detailed questionnaire for each aforementioned criteria was prepared based on the campus visit and thorough evaluation of the previous audit. The audit team in discussion with the college green cell has identified a team including teachers, non-teaching staff and students. The team has collected information that is addressed in the questionnaire.

3.2. Teaching Staff and Students

The following table illustrate the details of internal audit team involved at various levels of this audit process;

SN.O	Name	Department & Designation	Part Played	Audit Involved
1	k. Jhansi lakshmi	Computer	IQAC Coordinator	Green, energy, water
2	S. Anuradha	HOD OF Botany &Biotechnology	Coordinator	Green, energy, water
3	T. Vijaya Durga	Department of Botany	Data Collection	green
4	D. Sravanthi	Department of Botany	Data Collection	green
5	J. Bharathi	Department of Botany	Data Collection	green
6	Dr. ch. swapna	Department of Zoology	Data Collection	Water
7	B.V.Ramya	Department of Zoology	Data Compilation	Water
8	B.VijayaLakshmi	Department of Zoology	Data Compilation	Water
9	P.Jyothi	Department of Zoology	Data collection	Water
10	Y.Amani	Department of Zoology	Data Collection	Energy
11	M. Rajya Lakshmi	Department of Zoology	Data Collection	Energy
12	N. Suneetha	Department of Biotechnology	Data Collection	Energy
13	K.Divya	Department of Biotechnology	Data Collection	Energy
14	A. Bhargavi	2ndBZBT	Data collection	Energy
15	G.Sandhya	2NdBZBT	Data Collection	Energy
16	G.praveena	2NdBZBT	Data Collection	Energy
17	V.Rampandu	2NdBZBT	Data Collection	Energy
18	A. RachelJyothi	2NdBZBT	Data Collection	Energy
19	B. MadhuriSrivarsha	2NdBZBT	Data Collection	Energy
20	Ch. RamyaSaiPriya	2NdBZBT	Data Collection	Energy
21	G. Meghana	2NdBZBT	Data Collection	Energy
22	K. Bhavani	2NdBZBT	Data Compilation	Energy
23	K.Vardhini Sai Lakshmi	3ndBZBT	Data Compilation	Energy
24	M. VijayaDurga	3rdBZBT	Data Compilation	Energy
25	P. sailu	2NdBZBT	Data Collection	Green Audit

26	R.Durgasravani	2NdBZBT	Data Collection	Green Audit
27	J.Sandhya	2NdBZBT	Data Collection	Green Audit
28	V.Jithapragna	2NdBZBT	Data Compilation	Green Audit
29	Sk.Nasrin	2NdBZBt	Data Compilation	Green Audit
30	G.Pujitha	2ndBZC	Data Collection	Green Audit
31	J.Ramyasri	2ndBZC	Data Collection	Green Audit
32	K.Indu	2ndBZC	Data Compilation	Green Audit
33	P.Saisri	2ndBZC	Data Compilation	Green Audit
34	P.Sowjanya	2ndBZC	Data Collection	Green Audit
35	S.Bhanu	2ndBZC	Data Collection	Green Audit
36	V.Baby	2ndBZC	Data Collection	Green Audit
37	B.Lakshmiphanidevi	2ndBZC	Data Collection	Green Audit
38	D.Sivatulasi	2NdBZC	Data Collection	Green Audit
39	G.Likitha	2ndBZC	Data Collection	Green Audit
40	G.Durgasathwitka	2ndBZC	Data Compilation	Green Audit
41	G.Niharika	2ndBZC	Data Collection	Green Audit
42	G.Rashmi	2ndBZC	Data Collection	Green Audit
43	K.SriSaipoojitha	2ndBZC	Data Collection	Green Audit

The Green Audit Process:

1. Selection of area/activities/parts of the campus.
2. Planning of visit to campus to discuss the audit process.
3. The scope of the audit process was identified in consultation with the auditee. A meticulous plan of action was designed.
4. A team consisting of teachers, non teaching staff and students was constituted with specific tasks and a proper time schedule.
5. Data pertaining to identified parameters for green auditing of the campus were collected directly through an on-site visit.
6. Available back ground information on the identified activities and other parameters was collected.
7. The role of each stake holder in green related activities has been collected.
8. Historical aspects of green activities in the campus including flora fauna, water usage and waste generation, etc .were collected.
9. A questionnaire based on the preliminary visits and other evaluations was communicated to the authorities who are involved in the in house data collection.
10. Data collection based on a questionnaire.
11. Visit the campus by an audit team.
12. Data analysis and evaluation.
13. Discussion on the findings.
14. Report preparation.

On site audit activities

1. The preliminary visit and meeting with the campus authorities was the first step between the audit team and the auditee.
2. Site inspection to determine the parameters for audit.
3. Site visit and evaluation of collected information of the audit team.
4. Meeting with the Principal, IQAC coordinator, teachers, non-teaching staff and students
5. Meeting with the in house audit team for evaluation and clarification

Chapter–4

Green Audit

Inspection

The preliminary visit in connection with the pre-audit process to the campus had identified criteria for audit, parameters to be evaluated and the time schedule of green audit of Sir c.r.reddy College for women. It included meeting with the Principal, IQAC coordinator, teachers in charge of different green activities of the campus and students representing different departments, clubs and flora. This enables the auditing to gather all necessary preliminary information that is use in preparing pre auditing questionnaire and data sheets. The on- site audit team collected information based on a questionnaire and data sheet.

Questionnaire

The detailed questionnaire (Annexure I,II III&IV) was handled by three different audit teams and information was gathered. Information pertaining to green activities, water management, energy management and was analyzed under different titles and sub-titles. This was based on the parameters identified. The questionnaire was comprehensive, covering qualitative and quantitative dimensions.

Evaluation of documents and reports

The audit visit to the campus evaluated documents and reports (departments, clubs and fora) that are necessary for the audit process. This further strengthened the claims made by the campus authority on green operations on the campus. To generate a future action plan, the audit team had a detailed discussion with different in-house teams in the institute and a concluding discussion session with IQAC coordinator and Bursar was done to finalize the plans.

Findings and Analysis

Analysis of Green Practices

4.5.1.1. Gardens

Sir. C. R. Reddy college for women near railway gate, beside SBIBANK, is situated in a per-urban area where farming and agriculture are still being practiced in and around the campus. The campus biodiversity (Table-1) is an example of how they have imbibed the local practices and culture In preserving local biodiversity within the campus. The college management and authorities who are responsible for greening the campus area adopting methods to preserve local flora and fauna. The botanical garden and different concept based gardens (spice garden, medicinal plants garden, Ayurvedic preparation based plants (eg. *Stevia, Centella aceatica* etc.), are ideal for academic practices and learning while practicing.

TABLE-1

S.no	Scientific name	Family	Number Of plants
1	*Ixora coccinia(alba)*	*Rubeaceae*	*5*
2	*Ixora coccinia*	*Rubeaceae*	*8*
3	*Laurus novluis*	*Apocynaceae*	*3*
4	*Polyalthia longifolia*	*Annonaceae*	*19*
5	*Ixoracoccinia*	*Rubeace*	*6*
6	*Areca palm*	*Aracardeac*	*18*
7	*Agave inaquidence*	*Asparagaceae*	*5*
8	*Toxica Dendronvernix*	*Anacardeac*	*1*
9	*Phylanthus emblica*	*Phtlanthaceae*	*4*
10	*Aglaonema pictum*	*Araceae*	*27*
11	*Ixora alba*	*Rubeace*	*2*
12	*Annona reticulata*	*Annonace*	*4*
13	*Hibiscus rosasinensis*	*Malvaceae*	*5*
14	*Ixora coccinea*	*Rubeace*	*134*
15	*Nerium indica*	*Apocynacae*	*38*
16	*Azadirakta indica*	*Maliaceae*	*44*
17	*Bouganvillia glabra*	*Nictangiaceae*	*15*
18	*Bouganvillia*	*Nictangiaceae*	*1*
19	*Ponagamia pinnata*	*Fabaceae*	*12*
20	*Cocus neucifera*	*Fabaceae*	*33*
21	*Tectona grandis*	*Verbinaceae*	*24*

22	*Pentophorum pterocartus*	*Fabaceae*	*25*
23	*Albizzia lebbeck*	*Fabaceae*	*3*
24	*Mussaenda queen skit*	*Rubaceae*	*9*
25	*Bouganvillia*	*Nictangiacae*	*1*
26	*Calotropis gigantia*	*Apocynaceae*	*9*
27	*Nerium oleander*	*Apocynaceae*	*24*
28	*Liriope muscari (chlophytumcomosum)*	*Asparagaceae*	*42*
29	*Duranta repense*	*Verbinaceae*	*56*
30	*Catharanthus roses(Alba)*	*Apocynaceae*	*8*
31	*Mangifera indica*	*Anacardiaceae*	*16*
32	*Ficus religiosa*	*Moraceae*	*9*
33	*Manikara zapota*	*Sapataceae*	*9*
34	*Eucalyptus*	*Mytaceae*	*1*
35	*Tamrindus indica*	*Fabaceae*	*1*
36	*Psidium guava*	*Mytaceae*	*150*
37	*Musa paradisiaca*	*Musaseae*	*10*
38	*Pterocarpus santalinus*	*Fabaceae*	*5*
39	*Gossypium herbaceum*	*Malvaceae*	*1*
40	*Citrus limon*	*Rutaceae*	*1*
41	*Tecoma stands*	*Dignoeace*	*3*
42	*Hamelia patens*	*Rubeacea*	*6*
43	*Punica grantem*	*Punicaceae*	*2*
44	*Lawsonia innermis*	*Lythraceae*	*2*
45	*Dalbargia sisso*	*Fabaceae*	*4*
46	*Bauhinia equminata*	*Fabaceae*	*8*
47	*Sapindus sabonaria*	*Sapindaceae*	*2*
48	*Gardenia taitensis*	*Rubeacea*	*1*
49	*Calycophyllum condissimum*	*Rubeacea*	*1*
50	*Anaona squamosa*	*Annonaceae*	*2*
51	*Embica officinalis*	*Phyalanthaceae*	*3*
52	*Syzygium cumini*	*Mytaceae*	*4*
53	*Ficus elastica*	*Moraceae*	*3*
54	*Jasminum auriculatum*	*Oleaceae*	*1*
55	*Artabotrys hexapetals*	*Annonaceae*	*1*
56	*Cycas beddomi*	*Cycadaceae*	*1*

57	*Murrya koynegi*	*Rutaceae*	*4*
58	*Cinnamomum zylanicum*	*Lauraceae*	*2*
59	*Laurus nobilis*	*Lauraceae*	*2*
60	*Cardamom zylanicum*	*Zinzgibeaceae*	*2*
61	*Rauwolfia serpentina*	*Apocynaceae*	*1*
62	*Cambopogan citrus*	*Poaceae*	*1*
63	*Asparagus officinalis*	*Asparagaceae*	*1*
64	*Centella asiatica*	*Apiacea*	*2*
65	*Ocimum sanctum*	*Lamiaceae*	*1*
66	*Achyranthes aspara*	*Amaranthaceae*	*1*
67	*Curuma longa*	*Zingiberraceae*	*2*

Students of related subjects are actively involved in gardening, maintenance, etc. of gardens with in the campus. Further, they find the garden in apt place for discussions, combined studies, practicals, aesthetic purposes, spending leisure time, etc. Students are learning garden techniques by working in the garden with the help of teachers concerned. Garden make sample space and scope for them to conduct practicals including budding, grafting, lawn making, etc. for students of Botany and Environmental studies. They also find this as a good opportunity to observe and learn about birds and butterflies. Students from the department of Zoology learn about insects and their role in pollination by observing the Same in the botanical garden. So far,67 plants have been identified and maintained In the garden (Table–2).

Students of Botany are doing bee keeping and are learning the bee preference towards pants from the garden .Preparation of Vermi-compost and training on the same for those who are interested are conducted in the garden. There are enough resources (species of flora and fauna) available in different gardens and these resources are being utilized by the Botany and Zoology students for project works.

Table–2.Plants in the Botanical Garden

Sl. No	Name of Plants	Number of Plants
1	*Adenanthea pavonina*	1
2	*Adhatoda vasica*	3
3	*Aglaonema sp.*	10
4	*Allamanda cathartica*	5
5	*Anthurium species*	5

6	*Arachis pintoi*	>200
7	*Aralia sp.*	5
8	*Asparagus racemosus*	1
9	*Bambusa glaucophylla*	1
10	*Bauhinia tomentosa*	2
11	*Bauhinia variegata*	10
12	*Begonia sp.*	2
13	*Bougainvillea sp.*	30
14	*Cactu ssp.*	15
15	*Callistemon lanceolatus*	1
16	*Canna indica*	5
17	*Clematis elliptica*	2
18	*Clitoria ternatea*	2
19	*Cocos nucifera*	5
20	*Costu ssp.*	7
21	*Costus pictus*	2
22	*Crossandra infundibuliformis*	1
23	*Croto nsp.*	11
24	*Cupheaignea*	7
25	*Cycas circinalis*	1
26	*Datura metel*	30
27	*Dieffenbachia sanguine*	1
28	*Dracaena braunii*	2
29	*Dracaena fragrans*	3
30	*Duranta plumieri*	1

31	*Unrepentant*	2
32	*Ervatamia coronaria*	2
33	*Poinsettia pulcherrima*	1
34	*Gardenia gummifera*	3
35	*Gardenia jasminoides*	2
36	*Hamelia patens*	1
37	*Hibiscu srosa-sinensis*	3
38	*Holmskioldiasanguinea*	1
39	*Hypoestesphyllostachya*	3
40	*Ixora chinensis*	2
41	*Ixora philippinensis*	1
42	*Jasminum grandiflorum*	1
43	*Kopsia fruticosa*	1
44	*Lantana camara*	10
45	*Melastomam alabathricum*	5
46	*Murraya exotica*	2
47	*Nelumbium speciosum*	3
48	*Nerium indicum*	2
49	*Nymphaea pubescens*	2
50	*Osmoxylon lineare*	6
51	*Pachysta chyslutea*	4
52	*Pandanus odoratissimus*	2
53	*Passiflora sp*	1
54	*Piper longum*	1

55	*Piper nigrum*	3
56	*Plumeria indica*	1
57	*Quisqualis indica*	2
58	*Rivina humilis*	4
59	*Rosa sp.*	15
60	*Salvia officinalis*	2
61	*Sansevieria roxburghiana*	5
62	*Schefflera arboricola*	3
63	*Thevetia peruviana*	1
64	*Thuja sp.*	3
65	*Thunbergia laurifolia*	2
66	*Uvarianarum*	1
67	*Woodfordia fruticosa*	1
68	*TRICOPUS ZYLANICUS*	10

It would be nearly impossible to learn taxonomy and morphology for Botany students if plants are not available nearby. Different species of plants in the garden make this possible. Students are keen on maintaining species that are deal within their syllabus for practical and further observation.

The authorities are keen on developing the garden to higher levels by getting funds from sources such as spice board. The grants in aid were rightly spent on developing a spice garden with respective identification names and other details per training to the species in the spice garden.

The department of Botany and Eco Club initiated an agriculture garden where different species such as ginger, turmeric, chilli, etc are grown (Table3).The vegetables harvested from the vegetable garden are utilized in different messes or sell it out among the staff and students. A portion is shared among the volunteers.

Table–3.Vegetables and other Crop Plants

Sl. No.	Species of plants	Approximate Yield(kg)
1	*Abelmoschus esculentus*–*ladiesfinger*	30
2	*Amaranthus spp*–cheera	15
3	*Amorphophallu spaeoniifolius*–chena	50
4	*Benica sahispoida*–kumblanga	50
5	*Brassica oleracea*var.*boatrytis*–cauliflower	10
6	*Brassica oleraceavar.capitata*–cabbage	15
7	*Capcicum annum*–chilly	5
8	*Carica papaya*–papaya	20
9	*Coccinia grandid*–koval	1
10	*Colocasia esculenta*–chembu	50
11	*Cucumis sativus*–cucumber	1
12	*Cucurbita mellonia*–pumkin	1
13	*Curcuma longa*–turmeric	2
14	*Dioscorea alalta*–cherukizhangu	1
15	*Dioscorea esculenta*–kachil	90
16	*Lagenaria siceraria*–bottlegourd	1
17	*Lycopersicum esculentum*–tomato	10
18	*Manihot esculenta*–tapioca	1

19	*Momordica charantia*–bittergourd	1
20	*Moringa oleifera*–drumstick	5

Fruit Yielding Plants

Currently, in Andhra pradesh, there is a trend in cultivation of different species of fruit yielding plants in farms and orchards. Sir. C. R. Reddy college for women isalsogivingemphasisinaddingnewspeciesandvarietiesofdifferentfruityieldingplants in their campus. This would add value and awareness among students and staff about such plants. There are about 10 different fruit yielding species are available in the campus.(Table – 5)Although the fruit yielding species are cultivated at different places in a scattered manner, they are properly labeled and displayed.

Table–5.List of Fruit Yielding Plants

Sl. No.	Species of plants	Number of Plants
1	*Ananus comosus*	5
2	*Annona muricata*	1
3	*Annona squamosa*	10
4	*Artocarpus integrifolia*	8
5	*Artocarpus hirsutus*	5
6	*Citrus limon*	4
7	*Garciniam angostana*	3
8	*Hylocereus undatus*	2
9	*Mangifera indica*	15
10	*Morus alba*	2
11	*Musa paradisiaca*	50
12	*Nephelium lappaceum*	2
13	*Phelium mutabile*	1
14	*Syzygium cumini*	5
15	*Psidium jamun*	150
16	*Emblica officinalis*	5
17	*Phyllanthus emblica*	5

19	*Alpinia calcarata*	6
20	*Alpinia galangal*	3
21	*Alstonia scholaris*	4
22	*Andrographis paniculata*	2
23	*Anisomeles indica*	6
24	*Asparagus racemosus*	2
25	*Azadirachta indica*	3
26	*Bacopa monnieri*	4
27	*Biophytum sensitivum*	3
28	*Boerhavia diffusa*	5
29	*Butea monosperma*	2
30	*Calotropis gigantean*	2
31	*Cardiospermum halicacabum*	5
32	*Careya arborea*	8
33	*Cassia fistula*	4
34	*Cassia occidentalis*	2
35	*Catharanthus roseus*	3
36	*Centella asiatica*	6
37	*Chasalia curviflora*	3
38	*Cinnamomum zeylanicum*	6
39	*Clerodendrum viscosum*	3

40	*Clitoria ternatea*	5
41	*Cocos nucifera*	2

The diversity of medicinal plants in any place, especially in an academic campus is indicative the emphasis that the institute given towards traditional knowledge. This would be a platform for awareness, learning, and source for local usage. Sir. C.R .Reddy college for women is maintaining a medicinal plant garden that consists of a good wealth of plant species. The present status of flora that have medicinal importance is representative of regional and local Floristic diversity. About 89plantspeciesin the medicinal plant garden were found maintained on the campus (Table–6).

Table–6.MedicinalPlants

Sl. No.	Name of Plants	No. of Plants
1	*Achyranthes aspera*	2
2	*Adenanthera pavonina*	5
3	*Adhatoda vasica*	1
4	*Aerva lanata*	6
5	*Aloe vera*	20

6	*Coriandrum sativum*	3
7	*Costus pictus*	4
8	*Curcuma longa*	1
9	*Cyca scircinalis*	2
10	*Datura metel*	30
11	*Datura stramonium*	5
12	*Diospyros sp.*	4
13	*Duranta plumieri*	5
14	*Eclipta alba*	2
15	*Elephantopus scaber*	2
16	*Elettaria cardamomum*	3
17	*Emblica officinalis*	2
18	*Emelia sonchifolia*	3
19	*Euphorbia hirta*	2
20	*Evolvulus,alsinoides*	2
21	*Ficus benghalensis*	4
22	*Ficus microcarpa*	4
23	*Ficus racemosa*	3
24	*Ficus religiosa*	2
25	*Garciniam angostana*	5
26	*Heliotropium indicum*	2
27	*Hemidesmus indicus*	1

28	*Hibiscus rosa-sinensis*	3
29	*Holoptelea integrifolia*	6
30	*Holarrhena antidysenterica*	4
31	*Hopea parviflora*	8
32	*Ipomoea sepiaria*	3
33	*Ixora coccinea*	6
34	*Kaempferia galangal*	5
35	*Lannea coromandelica*	4
36	*Leucas aspera*	2
37	*Mimosa pudica*	3
38	*Murraya koenigii*	2
39	*Myristica fragrans*	5
40	*Nelumbium speciosum*	3
41	*Ocimum basailicum*	5
42	*Ocimum sanctum*	4
43	*Oxalis corniculata*	2
44	*Phyllanthus niruri*	3
45	*Pimenta dioica*	6
46	*Piper longum*	5
47	*Plumbago rosea*	2
48	*Pongamia pinnata*	3
49	*Psidium guajava*	4
50	*Rauvolfia serpentina*	10

51	*Rosa indica*	3
52	*Sansevieria roxburghiana*	1
53	*Saraca indica*	3
54	*Scoparia dulcis*	1
55	*Strobilanthes ciliatus*	2
56	*Strychnos nuxvomica*	3
57	*Syzygium aromaticum*	2
58	*Terminalia catappa*	5
59	*Tinospora cordifolia*	6
60	*Tragia involucrate*	4
61	*Tridax proccumbens*	2
62	*Vateria indica*	3
63	*Vernonia cinerea*	5
64	*Vitex xnegundo*	2
65	*Zingiber officinale*	*2*
66	*Duranta repens*	*30*
67	*Rauwolfia serpintina*	*5*
68	*Catharanthus roseus*	*30*
69	*Spathiphyllum*	*1*
70	*Theoretic alperuvian*	*1*
71	*Neolamackia cadamba*	*1*
72	*Bryophyllum*	*1*
73	*Couroupi taguianesis*	*2*
74	*Elettaria cardamomum1*	*1*
75	*Andrographis paniculata*	*1*
76	*Leucas aspera*	*1*
77	*Indigofera tinctoria*	*1*
78	*Lavanga tulasi*	*1*
79	*Adanthoda vasica*	*1*
80	*Curcuma longa*	*1*

81	*Centella asiatica*	2
82	*Curcuma amada*	1
83	*Asparagus officinalis*	1
84	*Mentha specta*	
85	*Alovera*	
86	*Himidismis indica*	1
87	*Piper betel*	1
88	*Piper longum*	1
89	*Ficus religiosa*	1
90	*Azadiractha indica*	30
91	*Chamaecostuscus pidatus*	10
92	*Neolamackia cadamba*	1
93	*Ocimumtenui florum*	5
94	*Ocimumbasilicum*	5
95	*Crosindra infundibuluformis*	10
96	*Zingiber officinale*	1
97	*Trachysperomum ammi*	10
98	*Annona muricata*	5

4.5.1.1.

Several significant and fruitful awareness programs both students and staff of the campus are arranged every year in the campus. Reflections from students are evident how effective swach awareness programs conducted in the campus.

Major programs conducted in the campus during the last years are:

Environment Related

1. Nature camps.
2. Field visits to different types of ecosystems.
3. Observances of environment Day, pollution day, Ozone day etc
4. Arranging seminars and symposiums on awareness and conservation by natural systems.

Conservation Activities

5 Collection and distribution of saplings.

6 Bird and Butterfly watching.

7 Sapling Planting etc.

Best Practices

8 2022-2023 organic farming of Guavajava

9 Engaging students in maintaining spices garden

10 Engaging students in maintaining herbal garden and medicinal garden.

11 Maintaining of *shanthistal*

12 Participation of teachers in different orientation program

13 Initiation of vermi-compost.

Trainings and Workshops

14 Hands on training on organic forming

15 Work shop on eco-friendly carry bags

Campaigns

16 Plastic free campaign

17 Nature camps, field trips and

Of these activities are year round programs and others are regular year wise or semester wise or any other stipulated time bound programs. This indicates that students and teachers concerned are actively involved in green activities in the campus.

4.4.2. Water Management

4.4.2.1. Major Findings.

1. water resources in the college are well maintained.
2. Separate tanks were installed for different blocks and for different purposes. This
3. enables to use water with maximum potential control.
4. The college has rain water harvesting mechanism which is to be appreciated.
5. This will help generate awareness about the importance of water conservation
6. and shall act as a model system to be followed by other institutions as well.
7. Wick irrigation farming and drip irrigation systems present in the campus were
8. found to be effective in reducing the amount of water used in agriculture sector.
9. The college organizes awareness programmes on water conservation frequently
10. to spread the message of significance of conserving water.
11. Students who are involved in green committees are doing a good job in water
12. related awareness programmes.
13. 92304 L of water is used per day by the college for its different uses (Table - 7).
14. 200 L of water per day is lost through the leaking of pipes (Table - 7).

15. The water consumption in the summer season is significantly high compared toother months.

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Table-7.Details of water analysis of sir CR Reddy College for women

Activity	Average use per activity in liters	Number of activity/day	Water use/person/day(L)	Number of persons using water	Total water consumption/day(L)
Washing hands and face	6L	thrice	2L/head	3009	18054L
Bath	60L	twice	30L/head hostel only	390	23400L
Washing clothes	20L	once	20L/head hostel only	390	7800L
Toilet flush	10L	atleast3	10L/head	500	5000L
Leaking/dripping(1drop/second/day)	Nil	nil	nil	nil	200L

Garden use	1500L	twice	nil	nil	3000L
Cooking(average)	3000L	four times	nil	500	12000L
Cleaning Floor	10000L	Once	nil	nil	10000L
Cleaning college bus	Nil	Nil	nil	nil	nil
La buses	2.5L	twice	5L	360	850L
Constructio n work	3000L	twice	nil	nil	6000L
Any other activity	3000L	twice	nil	nil	6000L
Total water use	20,598.5L	22 times	32,318	5,149	92304L

4.1.1.1. Suggestions

- There is no particular mechanism to find the water wastage. This has to be deal with utmost care without delay and has to be included in the future action plan.
- There is no water consumption monitoring system in the college.
- The college does not have waste water treatment for waste water generated from laboratories, canteen, hostel kitchen, toilets, bathrooms and office rooms.
- The waste water from canteen and kitchens is not suitably controlled and is not used for gardening. This has to be addressed and suitable action plans have to be evolve
- No adequate facilities available in the college to treat the waste water from chemical laboratories.
- Water fountain in the college was found to be dis functional. This need to be activated.

4.4.4. Carbon Footprint Audit

The most common greenhouse gases are carbon dioxide, water vapour, methane, nitrous oxide and ozone. Of all the greenhouse gases, carbon dioxide is the most prominent green house gas, comprising 402 ppm of the Earths atmosphere. Each human being is contributing towards adding green-house gases to the atmosphere depending upon his day to day activities and usage of instruments and machineries for different purpose. Release of carbon dioxide gas into the Earths atmosphere through human activities is commonly known as carbon footprint. An understanding about the same of any institute where large number of anthropogenic activities are happening is important to assess the contribution of emission of gases that are responsible for Green House Effect. Auditing for carbon footprint of Sir c. r. reddy college for women Campus was done using a
detailed questionnaire, so that the impact of the community on global environment can be assessed.

4.4.4.1. Major Findings

1. Total number of Students - 1695
2. Total number of Teachers -87
3. Number of non-teaching staff -70
4. Number of persons using cars - 2 (2L fuel per day)
5. Number of persons using two wheelers - 104 (50L fuel per day)
6. Number of persons using public transport - 1539, 21 km per day, average (180 L of fossil fuel per day)50
7. Number of cycles used in the campus- 10
8. LPG usage - 77.5 Cylinders per month
9. Total fossil fuel usage per day - 232 L, apart from LPG and fuel for generators

It is evident that majority of the campus community are relying on public transport system for commutation leading to the expense of 180 L of fuel per day. This shall be considered as a very conservative approach. Assuming that 20 persons travel together combined with number of motorcycles and cars lead to the usage of 232 L of fuel per day. This causes the emission of about 602 kg of CO_2 per day. This measurement is excluding the natural emission of Co_2 by human by breathing (ie. 1140g/day). Consumption of one litre LPG releases about 1.5kg of CO_2. At the rate of 77.5 cylinders per month the college is using about 1085 L of LPG that releases 1627.5kg CO_2 per month. Since there is no data from similar institution available a comparison of carbon footprint is not attempted.

Chapter-5
Recommendations

5.1.General recommendations

1. All the lists of plants shall be uploaded in the college site.
2. A file shall be maintained to assess and analyse the usage of garden by different stake holders.
3. There shall be a digital platform where students and staff shall get details about plants and animals in the campus. This may include name, information of systematic position as per standard classifications, usage, value, further references, etc.
4. The name boards shall be updated with QR code technology that enable the students and staff to scan the QR code to access relevant information of the taxa.
5. There shall be a discussion forum in the campus where a discussion on green activites is possible by students, alumni, staff, etc. and them operator of the group shall update the information in the digital repository accordingly.
6. Students and staff shall take initiative to start live campus discussion groups where green conservation and awareness shall be the main agenda.
7. The deliberations shall be shared among students and other stake holders through campus/social media.

5.2Water Management

8. Strengthening awareness on water conservation among student and teacher communities.
9. ‘Save Water’ posters to be affixed in the classrooms, hand washing areas.
10. Repair water leaks and leaky toilets immediately.

11. Install water aera tools and automatic shut-off devices on faucets.
12. Use low-flow shower heads and timer shut-off devices with automatic sensors to reduce water use during showers.
13. Bring a water bottle to college. At the end of the day, any left over can be poured on to the garden.
14. Set up an efficient water recycling system in the college canteen.
15. Install more rain water harvesting systems.
16. Install waste water system for chemistry labs.
17. Use green solvents and green methods (e.g.,double burette titration) in the chemical laboratories.

3.5. Energy Management

1. The on grid solar power plant can bring down electricity costs and might prove to bring in financial benefits in the long run .Being at a relatively highly in area of the town, there would be no issues with sunshine, particularly in summer.
2. Gradual replacement of existing on LED based lights to LED scan further bring down costs for lighting.
3. Replacement of existing electric fans with BLDC fans can significantly reduce power consumption and help in a good reduction in electricity charges.
4. Instead of using desktop work stations, we could consider desktop virtualization, wherever possible which could lead to reduce power consumption and reduced power costs.

Chapter-6

Future Action Plans

1. Year wise internal audit on green, water and energy to be conducted by respected teachers.
2. Proper management and month wise mapping of water and energy usage to be conducted by monitoring the same in the records.
3. Department wise awareness programs to be organized by department staff representative to each committee.
4. Proper waste water management
5. Proper monitoring and disposal of waste discharge from chemical laboratories
6. Implementation of sign boards and indications of water and energy usage.
7. Energy maintenance by proper usage of electrical appliances.
8. A timber garden and museum to be implemented
9. Vegetable and agriculture crop planting has to be increased using advanced technologies.
10. Promotion of visit to agriculture farmlands and processing centres.
11. Marketing of vegetables and crops cultivated in the campus.

The students and staff who are active in green related activities have a clear vision about how and what should be planned for a greener campus. They think that planting of more saplings during the world environment day would cater more awareness and enthusiasm in students who join a fresh each year. The college is also planning to initiate plant a tree/adopt a tree program where each student will be planting a sapling and taking care of it during his or her stay in the college. Although the college follow a university curriculum by implementing several such awareness program in their academic and non-academic activities promote more students turn to green activities

6.1 Conclusions

1. The management and other authorities are keen to make the campus a green campus
2. Sir CR Reddy College for women is making learning process by practical approach. This is fulfilled by setting different types of gardens, arboretum concept based garden and conservation of water and energy.
3. Staff and students are aware about the commitment of the institute towards the society.
4. Green audit at times makes the campus authority to understand the effect of implications towards greenness and conservation of water and energy.
5. The evaluation process proved that the authorities have applied implications suggested in the previous audit.
6. The campus community functions are oriented with an eco-friendly approach that enables the student community to develop a genuine approach on conservation of nature, and natural resources.
7. The results presented in the present report would be helpful for the authorities to make future action plans to develop more sophisticated ideas in bringing more values in future efforts towards conservation of biodiversity, water and energy.
8. We, the Divisional forest team , submitting the comprehensive audit report to the authorities of Sir C R Reddy College for women Campus. We hope the audit finding would help them implement better management plan to achieve a complete green campus, save maximum water and energy for a better future.

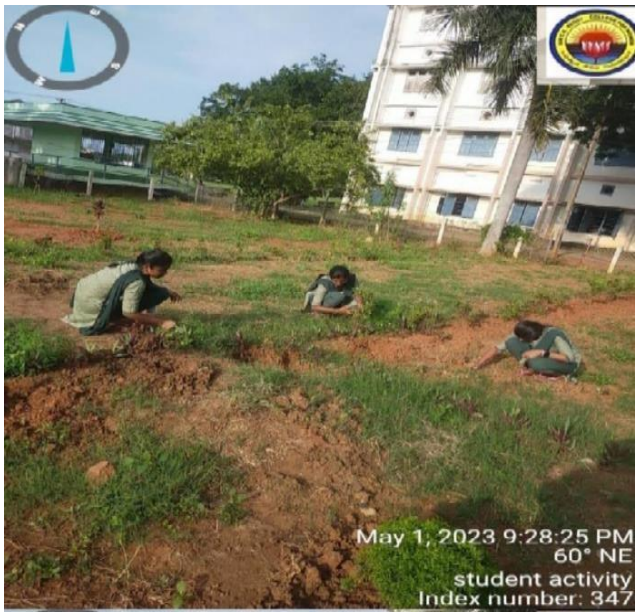
We suggest the college management to conduct the next audit after three years, ie. March 2026. This would help them understand whether they are heading forward by achieving the set for the plans and goals.

Acknowledgments

The Divisional Forest Office Social Forestry Division, Eluru Audit team thanks the Management and the Principal of Sir. C. R .Reddy, for entrusting us the green audit of their campus. We whole heartedly thank the teaching and non-teaching staff and students for their timely support rendered to the green audit team at different stages of the process that helped us to complete the audit in time. We also thank heads of various departments and the teacher in charge from each department for sharing documents and information in time. The support from different clubs and flora was adequate and timely. We thank the teacher and student coordinators of different clubs and flora for the same. The support from the office staff during visit to the campus for verification of documents is also highly appreciated.

PHOTOS

. REMOVEL OF WEEDS BY STUDENTS



Botanical garden maintenance by students

MEDICINAL PLANTS

Curcuma amada

Centella asiatica

Asparagaus officinalis

Selenicereus undatus

Bryophyllum pinnatum

Annexure–I

Green auditing of Sir C R Reddy College for women,

Eluru

Questionnaire for Green campus management

1. Is there a garden in your college? Area?
2. Is there concept based garden (star plants, medicinal plants, endemic species, agriculture, etc.), specify area for each.
3. Do students spend time in the garden? If so, approximate time and purpose. (Lists with priority Annexure-I).
4. List the plants (scientific names,Family,etc.) in the garden, with approx. .numbers of each species (Annexure-II).
5. Listofcampusflora(attachalistofplantswithdetails,includingscientificname,family,approximatenumberofplants,etc.) inyour campus
6. Name and number of the medicinal plants in your college campus.
7. Any threatened plant species planted/conserved (provide a list with their threat status).
8. List the plants to be planted on your campus in the next three years. **(Trees, vegetables, herbs, etc.)**
9. List the species planted by the students, with numbers (Annexure–III).
10. Have you go any external funding for developing gardens in the campus? If yes, year, agency, and amount of funding.
11. Explain how you utilized funds for gardens.
12. Whether you have displayed scientific names of the plants in the Campus?
13. What are the vegetables cultivated in your vegetable garden? (Mention the quantity of harvest in each season).
14. How much water is used in the vegetable garden and other gardens?
15. Mention the source and quantity of water used(per month).
16. Are you using any type of recycled water in your garden?

17. Who is in charge of gardens in your college?

18. Is there any permanent staff to look after gardens in the campus?

19. List the name and quantity of pesticides and fertilizers used in your gardens?

20. Are you doing any organic practice in your campus? List them?

21. Do you have any composting pit (specify what compost)in your college? If yes, what you do with the compost generated?

22. Do you have a vegetable garden on the campus?

23. If yes, how the harvested vegetables are utilized? Do you have any market in the campus?

24. Is there any True club in your college? If yes what are the activities?

25. Is there any arboretum in your college? If yes detail soft trees planted.

26. Is there any fruit yielding plants in your college? If yes details of the trees planted.

27. Is there any groves in your college? If yes details of the trees planted.

28. Is there any irrigation system in your college?

29. What is the type of vegetation in the surrounding area of the college?

30. What are the nature awareness programs conducted in the campus?(2014-19).Provide a list(annexure-IV)

31. What are the involvement of students in the green cover maintenance?
Planting saplings and maintenance

32. What is the total area of the campus under tree cover? Or under tree canopy?

33. Share your future plans for further improvement of green cover.

34. Have you in corporated green conservation aspects in your curriculum?

35. How often you conduct public programs on green conservation?

36. Do students reach out to the public in conveying the message of nature conservation?

Annexure–II

Green auditing of Sir C R Reddy College for women, Eluru

Questionnaire for Water Management Auditing

1. What is the total Area of the campus?
2. Number of total teachers, non-teaching staff and students in the campus.
3. Provide a list with different uses of water in the campus (Annexure2-I).
4. Name different sources of water in your college?
5. How many wells are there in your college?
6. Number of electric motors used for pumping water from each well?
7. What is the total horse power of each motor?
8. What is the depth of each well?
9. What is the present depth of water in each well?
10. How does your college store water?
11. Capacity of the overhead water tank/sin the campus?(in litres)
12. Quantity of water pumped every day?(in litres)
13. How do you justify that the water usage is judicious in the campus?

14. Is there any water wastage? If yes, specify why and how.
15. Is there any mechanism to identify water wastage in the campus, explain(Annexure2-II)
16. What are the possible ways to check wastage of water?
17. Is there any waste water generation happening in the campus?
18. What are the possible sources of waste water in the campus?
19. Where does the waste water go?
20. Are you reusing the waste water after recycling it?

21. What are the systems of management of water used in your labs, especially Chemistry lab (or labs where experiments are happening involving chemicals)?
22. Does this water get mixed with ground water?
23. Is there any treatment for the lab water after usage?
24. Is there a system of practice of green chemistry in your campus? Give details.

25. Write down four ways that could reduce the amount of water used in your college.

26. Record of water use from the college water meter for six months.
27. Amount, if any, as charges towards water paid for water connections.
28. Number of water coolers in the campus. Amount of water used per day?(in litres)
29. Number of water purifiers in the campus, if any.
30. Number of water taps in the campus. Amount of water used per day?
31. Number of bathrooms and toilets separately for staff rooms, common, hostels (Annexure2-III).
32. Number of toilets?
33. Amount of water used per day in the toilets?
34. Number of water taps in the canteen. Amount of water used per day?
35. Amount of fire-wood used in the canteen kitchens?
36. How much ash collected after burning fire wood per day in the canteen?
37. Amount of water used per day for irrigation purpose.
38. Number of water taps in laboratories. Amount of water used per day in each lab?
39. Number of taps in hostels.
40. Total use of water in each hostel?
41. Provide a list of month wise water usage in different areas in the campus
42. Is there any water used for agricultural purposes?
43. Is there any rain water harvest system in the campus? If yes, details of the storage capacity?
44. Report on the status of their functioning.
45. Provide number of damaged taps in the campus? Amount of water lost due to damaged taps or water supply system per day?
46. How do you convey the message of water conservation in the campus?
47. How many water fountains are there?_____

48. How often the garden is getting irrigated?
49. Amount of water used to water the ground?
50. Amount of water used for college us cleaning?(litres per day)
51. Is there any other way by which water is being utilized?.
52. Area of the college land which is under concrete tiles.
53. Is there any future plan for the water management in the campus?
54. Are there any water saving techniques followed in your college? Explain?
55. Is there any mechanism by which message on water conservation is been conveyed to staff and students.

Annexure–III

Green auditing of Sir C R Reddy College for women, Eluru

Questionnaire for Energy Management Audit

1. Listoutwaysofenergyusageinthecampus.(Electricityelectricstove,kettle,microwave,incinerator;LPG, firewood, Petrol, diesel and others).
2. Electricity bill amount for the last three years.
3. Amount paid for LPG cylinders for last three years.
4. Any other payments towards energy related matters for last three years in the campus
5. Weight of fire wood used per month and amount of money spent? Also mention the amount spent for petrol/diesel/others, if any?
6. Are there any energy saving methods employed in your college? If yes, please specify.
7. What are the types of bulbs used in the campus?
8. Provide a list of number of bulbs of each types.
9. Provide the total energy utilization by each types of bulb per month.
10. How many CFL bulbs has your college installed? Mention use (Hours used/day for how many days in a month)
11. Energy used by each bulb per month?(Forexample-60 watt bulb x 4hours x number of bulbs =kWh).
12. How many LED bulbs has your college installed? Mention use (Hours used/day for how many days in a month)
13. How many in candescent(tungsten)bulbs has your college installed? Mentions use (Hours used/day for how many days in a month)
14. How many fans installed in the campus? Mention use (Hours used/day for how many days in a month)
15. Energy used by all fans per month?(kwh)
16. How many air conditioners are in use in the campus? Mention time of their usage (Hours used/day for how many days in a month).
17. Energy used by all air conditioners per month?(kwh).
18. How many electrical equipments including weighing balance used in the campus? Mention use(Hours used/day for how many days in a month)
19. Energy used by each such electrical equipment per month?(kwh).
20. How many computers were in use in the campus? Mention the energy use. (Hours used/day for how many days in a month)

21. Energy usage by all computers per month?(kwh)
22. How many photo copier machines are installed and in use at present in the campus? Mention use(Hours used/day for how many days in a month).
23. Energy used by all photocopier per month? (kwh) Mention use (Hours used/day for how many days in a month)
24. How many cooling apparatus present in the campus? Mention use(Hours used/day for how many days in a month)
25. Energy used by all cooling apparatus per month? (kwh)Mention use(Hours used/day for how many days in a month).
26. How many inverters your college installed? Mentions use(Hours used/day for how many days in a month)
27. Energy used by each inverter per month?(kwh)
28. electrical equipment How many used in different labs(methods that are not included in the above calculations) in the campus? Mentions use (Hours used/day for how many days in a month)
29. How many electrical equipments are available in all labs in the campus?
30. Energy used by all equipments together per month?(kwh)
31. How many heaters used in the canteen of your college? Mention their use(Hours used/day for how many days in a month
32. Energy used by each heater per month?(kwh)
33. Number of street lights in your college?
34. Energy used by all street lights per month?(kwh)
35. Number of televisions in your college and hostels?
36. Energy used by all TVs per month?(kwh)
37. Any other items that uses energy (Please write the energy used per month) Mention the application (Hours used/dayfor how many days in a month)
38. Does the campus have any alternative energy sources/nonconventional energ y sources?(photo voltaic cells for solar energy,windmill,energy efficient stoves,etc.,)Specify.
39. Do you run“switchoff”drillsatcollege?
40. Are your computers and other equipment put on power-saving mode?
41. Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on stand by modes most of the time?If yes,how many hours?
42. What are the energy conservation methods adapted by your college?
43. Is there any public awareness systems informing necessity of energy conservation in ?
44. Write an Oteon the methods/practices/adaptationsbywhichyou canreducetheenergyuseinyourcollegecampusin future.

Green Auditing of Sir C R Reddy College for women

Questionnaire for Carbon footprint Auditing

1. Total number of students and teachers in your College?

Gender	No of students	No of Teachers	No of non-teaching staff
Male			
Female			
Transgender			
Total			

2. Total Number of vehicles used by the stake holders of the college/per day.

3. No.of cycles used/day in the campus.

4. No. of two wheelers used (average distance travelled, cc of two wheelers and quantity of fue land amount used/day).(C.F-Annexure-I).

5. No. of cars used (average distance travelled, power of engine (cc) and quantity of fuel and amount used/day).(C.F-Annexure-II).

6. No. persons using common (public) transportation (average distance travelled and quantity of fuel and amount used/day).

7. No.of persons using college conveyance (general transportation) by the students, non teaching staff and teachers (average distance travelled and quantity of fuel and amount used per day)

8. Number of parent-teacher meetings in a year?Parents turned up(approx.)

9. Mention their mode of travel and give approximate cost of their commutation.

10. Number of visitors with vehicles per day?

11. Number of generators used/day (hours).Provide quantity and amount for fuel usage/ day.

12. Number of LPG cylinders used in the campus. Provide quantity and amount of fuel used/day.

13. Quantity of kerosene used in the canteen/labs (Provide quantity and amount of fuel used per day and amount spent).

14. Amount of taxi/auto charges paid and the amount of fuel used per month for the transportation of vegetables and other materials to the campus.

15. Amount of taxi /auto charges paid per month for the transportation of office goods to the college.

16. Amount of taxi /auto charges paid per month by the stake holders of the college.

17. Use of any other fossil fuels in the college (Give the amount of fuel used per day and amount spent). (C.F-Annexure-III).

18. What are the methods you might adopt in the future to reduce the quantity of fuel used by the stake holders /students /teachers/ non-teaching staf of the college.

Audited by

DIVISIONAL FOREST OFFICE SOCIAL FORESTRY DIVISION

ELURU

Principal
Sir C.R.Reddy College for Women
ELURU

GREEN AUDIT

Report (2021-2022)

Prepared by

DEPARTMENT OF BOTANY

SIR C R REDDY COLLEGE FOR WOMEN, ELURU
(Affiliated to ADIKAVI NANNAYA UNIVERSITY, Rajamahendravaram)

ELURU, ELURU Dist. Andhra Pradesh 534007

Audited by

DIVISIONAL FOREST OFFICE SOCIAL FORESTRY DIVISION
ELURU

U.G BLOCK FRONT VIEW

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About college

Sir. C. R. Reddy college for women established in the year1987 by Sir. CATTAMANCHI RAMALINGA REDDY. The educational society is one of the premier institutes affiliated to AKNU-Rajahmundry. keeping in view the vast changes in the industrial services sector, and the recent focus of technical education has been on innovation, research and development along with major changes in the curriculum and strategies of the institution was established in spite of stiff competition However this institute is trying to cope up with this change and trying its level best to take strategic steps for improvement in this regard.

In cognizant of the above this institution aims to be a leader in technical and management education in the area of West Godavari district and states a whole and to earn a unique identity for the development of high quality knowledge resources and diversification of teaching UG,PG and management education

In view of the above the management felt the immense significance of certification by the UGC . Hence the proposals for 2(f) status for this proactive institution.

GOALS

- To be among top5 colleges of A.P in the next 5Years.
- To be an institute with a focus on student concentric activities where academic is followed with utmost passion and sincerity
- To provide the high quality resource and infrastructure in the next 5years
- To strengthen relationships with leading industries and organizations /institutions.

Objectives

- To attract and retain highly qualified, talented and motivated staff
- To focus not only on quality education but on total quality management in Sir C.R .Reddy college for women
- To design and develop a digital ecosystem to collaborate communication and connect with stake holders
- To introduce and implement innovation in T-L processes to strengthen academic delivery.

CERTIFICATE

GREEN AUDIT CERTIFICATE

This is to certify that

Sir C. R. Reddy College for Women

has successfully undergone and the Environmental Audit and meet the standards during the Green Audit 2021-2022

Approved by

Dr. Sunkavalli

Govyavasaya Vignana Samithi,

Nachugunta

Regd. No.

GOUVYAVASAYA VIJNANA SAMITHI NACHUGUNTA

03.05.2021

Date

Signature

Zonal officer

in Organic Farming

Dr.SUNKAVALLI GOUVYAVASAYA VIJNANA SAMITHI NACHUGUNTA, Unguturu Mandal, W.G. District.

Chapter1

Introduction

Green audit

The Green audit process was begun in the 1970s with the intention of identifying the activities carried out in a given institution or company.This was initiated against the background of growing concern over the changing climate and related aspects.Green audit is a tool to identify the range of environmental impacts and assess the compliance of the operations on the development and regular activities within an organization.It may also assess the compatibility of the operations within an organization or a company with existing applicable laws and regulations and the expectations of the in various stake holders. It further assesses the possible implications and effect of pollution due to the operations within the organization. The audit also seeks to identify possible means and methods to save investments, work quality, improve the health and safety of their employees, reduce liabilities and reduce the rate of environmental pollution .A continuous process of such audit might result in maintaining the quality of these aspects with in the premises of any organization.

Most companies, government and non-government bodies and other institutions Conduct green audit aiming

- To ensure that the performance of the institution with respect to environmental activities are involved in, this in compliance with existing laws and regulations.
- To check the functionality and their operating success, including water supply, energy related matters and other similar matters that are related to green operations on the campus
- To formulate or update the institution's environmental policy, if warranted.
- To measure the environmental impact of operational processes related to green activities on the campus.

- To measure the performance of each green related operations and actions on the campus.
- To generate at a base of green activities for continuous monitoring to assess the success of each of them.
- To identify future potential abilities.
- To align the institution's developmental and day to day activities with the state division, mission, strategies ,etc.
- To identify possible ways to reduce expenditure and running costs on equipments, appliances, etc. or try enhance revenue income.
- To improve process and materials efficiency, and in response to take holder requests for increased disclosure.

The process of green audit based on operational activities within an institution happens not necessarily based on laws and regulations. It might be largely based on awareness and concerns on environmental performances within and outside the institute's premises. This further strengthens the fact regarding social responsibilities of the organization. Majority of the institutions that conducted green audits in there cent past has realized the importance of the same as they could easily manage their operational costs and provide good atmosphere to their stakeholders. The green audital so provides opportunities to identify full range of operations within an organization, the impacts of maintaining and functioning of its operational goods and services, the actual source of raw materials for different activities within the organization, the costs of operations of its offices ,functional units, and other facilities. It also provide chances to understand the relationship with employees, material suppliers, stakeholders, etc. The recommendations, findings and suggestions that emerge during green audit would certainly help the management of the organization to set up future action plan that best suits to them.

General steps involved in Green Audit

1. Systematic and exhaustive data collection.
2. Evidence based documentation of activities.
3. Regular monitoring.
4. Provide standards and methods for improvement by establishing cost effective green action plan.

Chapter–2

Sir. C. R. Reddy College for women

Historical Account

Brief History

It was established in the year 1987.The college offers under graduate and Sir.C.R. Reddy College for Women, Vatluru is on among the leading higher education institutions in Andhra pradesh. It has completed 36 years of academic mission. The college post- graduate degrees in the, science and commerce streams .surrounded by agricultural farm lands, it adopts a healthy culture of as well as modern green practices. The campus is surrounded by heterogeneous vegetation with a fair number of shady trees naturally found in the locality.

Geography

The college is situated in Eluru district. Its location coordinates are9°58′38.14″N76°35′46.81″E.the geographical features of undulated land are as tapering in to paddy fields. The raised part of the region provides conducive conditions for the growth of tropical evergreen and deciduous varieties of fruit yielding and other trees.

General Information

The college offers 12 UG programs and 1 PG programme. 12 departments are recognized as research centres. The college has almost 1 6 9 5 students on its rolls in various programs, with girls forming almost 60%. There are 92 teaching staff in the various disciplines. Further, the college has 68 teachers on More than 95% of the members of different faculties are women. About 52 administrative staff members and supporting staff are working in the college office and different departments. The college is tapping various funding sources from different National and State funding agencies such as the University Grants Commission (UGC),

The college is adopting information technology as per the requirements. It also implement advance learning practices and system with ut most care. Digital Library with over 6 some examples for the same. The college publishes a bi-annual journal called The college is adopting information technology as per the requirements. It also implement advance learning practices and system with ut most care. Digital Library with over 65000 titles of various disciplines, UGC sponsored INFLIBNET, etc. are 5000 titles of various disciplines, UGC sponsored INFLIBNET, etc.are

"Science and Society" with ISSN number since 2020. Several endowment lectures inter-disciplinary national seminars and invited talks by experts are some dedications the college shown towards academic excellence

Various clubs and flora such,Entrepreneurship Development Club (EDC),,Eco Club, etc. are actively involved in the development of student capacity and personality.

Different department celebrations, inter-departmental and inter-collegiate competitions, and other celebrations helps the students to perform and sharpen their talents. All UGC, state government and university norms and directions are practiced without fail in the campus. This enables the students to develop their life with multifaceted and systematic activities. Parent Teacher Association (PTA) and Alumni Association play a good role in between the on campus students and society.

There are five air conditioned and well-furnished 2 seminar halls belonging to different departments, 3 computer labs, three smart class rooms, one language lab, about 250 computers with internet access, 1 photocopying machine, 15 DLP Projectors and so on. 3 Ladies' Hostels, Canteen, Post-office, Bank, Gymnasium.

Yoga Centre, Counselling Centre, Book Stall and Stationery Shop are the strength and diversity of the infrastructure of the campus. This indicates that the campus is aligning its resources with advancement in the world of technology and development. This is very much in line with the vision of the college.

A dedicated and well equipped IQAC cell controls the activities that enables the campus to run along the fore runners of academic institutes in AP . The IQAC is well connected with the college management, administrative office, different departments, clubs etc. It also act as a mediator in organising several activities in the campus. Systematic documentation of activities and academics is a characteristic feature of the college. The IQAC cell enables the campus to get accreditations from different accrediting agencies.

2.1. Previous Green Audit

The previous green audit of sir c r Reddy college for women was done during April-May 2021 by. The report of the green audit was a comprehensive evaluation after thorough evaluation of all aspects related to concerned green activities of the campus. It identified the green activities in the campus involving, management, teachers and students. It also identified lacunas in green practices of the campus and recommended a few practices to be implemented for it to become a green campus. The following were the common recommendations posted in the previous audit.

- Adopt an environmental policy for the college.
- Establish a purchase policy towards environmental friendly materials.
- Introduce UGC Environmental Science course to all students.
- Conduct more seminars and group discussions on environmental education
- Students and staff can be permitted to solve local environmental problems.
- Renovation of cooking system in the canteen to save gas.
- Establish water, waste and energy management systems.(see Green Auditing of Sir c r reddy College,2022).

The college has apparently tried their level best to implement these recommendations within the stipulated time period. It also adopted other policies and practices that help them to achieve a green campus. The previous audit also suggested criteria wise recommendations such as water management and energy management. Most of there commendations were dealt with by the campus authority.

2.2. Role of Management in Green Management

The part played by the college management in bringing the campus to a green one is adorable.

The following were the initiatives by the college authorities in green management:

1. The management developed separate teams for implementing green policy in the campus.
2. Regular evaluation system has been established with monitoring cells for green activities in the campus.
3. The management has allotted budget for implementing green policies in the campus.
4. The green monitoring cell evaluates developmental and functional activities and makes recommendations for improvement of the green aspects.
5. These recommendations are implemented without delay and fail.
6. Clubs that are related to green activities are encouraged to conduct programs in and around the campus.
7. The management is keen on the social commitments and tries for each out to the general public through teachers and students.
8. The management is keen in conducting awareness programs based on its green policies.
9. The support and part played by management is vital in the green campus related activities.

Chapter3
AUDIT PREPARATION

3.1. Management

The Sir c.r.reddy College management was very keen in taking up there commendation of conducting a green audit after two years after the previous audit. In the light of this, the college management approached Sacred Heart College, which has a consultancy wing offering services like green audit of institutions. Dr Sunkavalli Go veyavasaya vignana samithi Nachugunta agreed to conduct the green audit of Sir c r Reddy college for women College. After this, there was a preliminary visit to the campus to set up different criteria and questions that are necessary for an updated green audit.

The following were different criteria set forth for the present green audit.

a) Green Practices
b) Water Management
c) Energy Management
d) Carbon Footprint

A detailed questionnaire for each aforementioned criteria was prepared based on the campus visit and thorough evaluation of the previous audit. The audit team in discussion with the college green cell has identified a team including teachers, non-teaching staff and students. The team has collected information that is addressed in the questionnaire.

3.2. Teaching Staff and Students

The following table illustrate the details of internal audit team involved at various levels of this audit process;

SN.O	Name	Department & Designation	Part Played	Audit Involved
1	k. Jhansi lakshmi	Computer	IQAC Coordinator	Green, energy, water
2	S. Anuradha	HOD OF Botany &Biotechnology	Coordinator	Green, energy, water
3	T. Vijaya Durga	Department of Botany	Data Collection	green
4	D. Sravanthi	Department of Botany	Data Collection	green
5	J. Bharathi	Department of Botany	Data Collection	green
6	Dr. ch. swapna	Department of Zoology	Data Collection	Water
7	B.V.Ramya	Department of Zoology	Data Compilation	Water
8	B.VijayaLakshmi	Department of Zoology	Data Compilation	Water
9	P.Jyothi	Department of Zoology	Data collection	Water
10	Y.Amani	Department of Zoology	Data Collection	Energy
11	M. Rajya Lakshmi	Department of Zoology	Data Collection	Energy
12	N. Suneetha	Department of Biotechnology	Data Collection	Energy
13	K.Divya	Department of Biotechnology	Data Collection	Energy
14	A. Bhargavi	2ndBZBT	Data collection	Energy
15	G.Sandhya	2NdBZBT	Data Collection	Energy
16	G.praveena	2NdBZBT	Data Collection	Energy
17	V.Rampandu	2NdBZBT	Data Collection	Energy
18	A. RachelJyothi	2NdBZBT	Data Collection	Energy
19	B. MadhuriSrivarsha	2NdBZBT	Data Collection	Energy
20	Ch. RamyaSaiPriya	2NdBZBT	Data Collection	Energy
21	G. Meghana	2NdBZBT	Data Collection	Energy
22	K. Bhavani	2NdBZBT	Data Compilation	Energy
23	K.Vardhini Sai Lakshmi	3ndBZBT	Data Compilation	Energy
24	M. VijayaDurga	3rdBZBT	Data Compilation	Energy
25	P. sailu	2NdBZBT	Data Collection	Green Audit

26	R.Durgasravani	2NdBZBT	Data Collection	Green Audit
27	J.Sandhya	2NdBZBT	Data Collection	Green Audit
28	V.Jithapragna	2NdBZBT	Data Compilation	Green Audit
29	Sk.Nasrin	2NdBZBt	Data Compilation	Green Audit
30	G.Pujitha	2ndBZC	Data Collection	Green Audit
31	J.Ramyasri	2ndBZC	Data Collection	Green Audit
32	K.Indu	2ndBZC	Data Compilation	Green Audit
33	P.Saisri	2ndBZC	Data Compilation	Green Audit
34	P.Sowjanya	2ndBZC	Data Collection	Green Audit
35	S.Bhanu	2ndBZC	Data Collection	Green Audit
36	V.Baby	2ndBZC	Data Collection	Green Audit
37	B.Lakshmiphanidevi	2ndBZC	Data Collection	Green Audit
38	D.Sivatulasi	2NdBZC	Data Collection	Green Audit
39	G.Likitha	2ndBZC	Data Collection	Green Audit
40	G.Durgasathwitka	2ndBZC	Data Compilation	Green Audit
41	G.Niharika	2ndBZC	Data Collection	Green Audit
42	G.Rashmi	2ndBZC	Data Collection	Green Audit
43	K.SriSaipoojitha	2ndBZC	Data Collection	Green Audit

The Green Audit Process:

1. Selection of area/activities/parts of the campus.
2. Planning of visit to campus to discuss the audit process.
3. The scope of the audit process was identified in consultation with the auditee. A meticulous plan of action was designed.
4. A team consisting of teachers, non teaching staff and students was constituted with specific tasks and a proper time schedule.
5. Data pertaining to identified parameters for green auditing of the campus were collected directly through an on-site visit.
6. Available back ground information on the identified activities and other parameters was collected.
7. The role of each stake holder in green related activities has been collected.
8. Historical aspects of green activities in the campus including flora fauna, water usage and waste generation, etc .were collected.
9. A questionnaire based on the preliminary visits and other evaluations was communicated to the authorities who are involved in the in house data collection.
10. Data collection based on a questionnaire.
11. Visit the campus by an audit team.
12. Data analysis and evaluation.
13. Discussion on the findings.
14. Report preparation.

On site audit activities

1. The preliminary visit and meeting with the campus authorities was the first step between the audit team and the auditee.
2. Site inspection to determine the parameters for audit.
3. Site visit and evaluation of collected information of the audit team.
4. Meeting with the Principal, IQAC coordinator, teachers, non-teaching staff and students
5. Meeting with the in house audit team for evaluation and clarification

Chapter–4

Green Audit

Inspection

The preliminary visit in connection with the pre-audit process to the campus had identified criteria for audit, parameters to be evaluated and the time schedule of green audit of Sir c.r.reddy College for women. It included meeting with the Principal, IQAC coordinator, teachers in charge of different green activities of the campus and students representing different departments, clubs and flora. This enables the auditing to gather all necessary preliminary information that is use in preparing pre auditing questionnaire and data sheets. The on- site audit team collected information based on a questionnaire and data sheet.

Questionnaire

The detailed questionnaire (Annexure I,II III&IV) was handled by three different audit teams and information was gathered. Information pertaining to green activities, water management, energy management and was analyzed under different titles and sub-titles. This was based on the parameters identified. The questionnaire was comprehensive, covering qualitative and quantitative dimensions.

Evaluation of documents and reports

The audit visit to the campus evaluated documents and reports (departments, clubs and fora) that are necessary for the audit process. This further strengthened the claims made by the campus authority on green operations on the campus. To generate a future action plan, the audit team had a detailed discussion with different in-house teams in the institute and a concluding discussion session with IQAC coordinator and Bursar was done to finalize the plans.

Findings and Analysis

Analysis of Green Practices

4.5.1.1. Gardens

Sir. C. R. Reddy college for women near railway gate, beside SBIBANK, is situated in a per-urban area where farming and agriculture are still being practiced in and around the campus. The campus biodiversity (Table-1) is an example of how they have imbibed the local practices and culture In preserving local biodiversity within the campus. The college management and authorities who are responsible for greening the campus area adopting methods to preserve local flora and fauna. The botanical garden and different concept based gardens (spice garden, medicinal plants garden, Ayurvedic preparation based plants (eg. *Stevia, Centella aceatica* etc.), are ideal for academic practices and learning while practicing.

TABLE-1

S.no	Scientific name	Family	Number Of plants
1	*Ixora coccinia(alba)*	*Rubeaceae*	*5*
2	*Ixora coccinia*	*Rubeaceae*	*8*
3	*Laurus novluis*	*Apocynaceae*	*3*
4	*Polyalthia longifolia*	*Annonaceae*	*19*
5	*Ixoracoccinia*	*Rubeace*	*6*
6	*Areca palm*	*Aracardeac*	*18*
7	*Agave inaquidence*	*Asparagaceae*	*5*
8	*Toxica Dendronvernix*	*Anacardeac*	*1*
9	*Phylanthus emblica*	*Phtlanthaceae*	*4*
10	*Aglaonema pictum*	*Araceae*	*27*
11	*Ixora alba*	*Rubeace*	*2*
12	*Annona reticulata*	*Annonace*	*4*
13	*Hibiscus rosasinensis*	*Malvaceae*	*5*
14	*Ixora coccinea*	*Rubeace*	*134*
15	*Nerium indica*	*Apocynacae*	*38*
16	*Azadirakta indica*	*Maliaceae*	*44*
17	*Bouganvillia glabra*	*Nictangiaceae*	*15*
18	*Bouganvillia*	*Nictangiaceae*	*1*
19	*Ponagamia pinnata*	*Fabaceae*	*12*
20	*Cocus neucifera*	*Fabaceae*	*33*
21	*Tectona grandis*	*Verbinaceae*	*24*

22	*Pentophorum pterocartus*	*Fabaceae*	*25*
23	*Albizzia lebbeck*	*Fabaceae*	*3*
24	*Mussaenda queen skit*	*Rubaceae*	*9*
25	*Bouganvillia*	*Nictangiacae*	*1*
26	*Calotropis gigantia*	*Apocynaceae*	*9*
27	*Nerium oleander*	*Apocynaceae*	*24*
28	*Liriope muscari (chlophytumcomosum)*	*Asparagaceae*	*42*
29	*Duranta repense*	*Verbinaceae*	*56*
30	*Catharanthus roses(Alba)*	*Apocynaceae*	*8*
31	*Mangifera indica*	*Anacardiaceae*	*16*
32	*Ficus religiosa*	*Moraceae*	*9*
33	*Manikara zapota*	*Sapataceae*	*9*
34	*Eucalyptus*	*Mytaceae*	*1*
35	*Tamrindus indica*	*Fabaceae*	*1*
36	*Psidium guava*	*Mytaceae*	*150*
37	*Musa paradisiaca*	*Musaseae*	*10*
38	*Pterocarpus santalinus*	*Fabaceae*	*5*
39	*Gossypium herbaceum*	*Malvaceae*	*1*
40	*Citrus limon*	*Rutaceae*	*1*
41	*Tecoma stands*	*Dignoeace*	*3*
42	*Hamelia patens*	*Rubeacea*	*6*
43	*Punica grantem*	*Punicaceae*	*2*
44	*Lawsonia innermis*	*Lythraceae*	*2*
45	*Dalbargia sisso*	*Fabaceae*	*4*
46	*Bauhinia equminata*	*Fabaceae*	*8*
47	*Sapindus sabonaria*	*Sapindaceae*	*2*
48	*Gardenia taitensis*	*Rubeacea*	*1*
49	*Calycophyllum condissimum*	*Rubeacea*	*1*
50	*Anaona squamosa*	*Annonaceae*	*2*
51	*Embica officinalis*	*Phyalanthaceae*	*3*
52	*Syzygium cumini*	*Mytaceae*	*4*
53	*Ficus elastica*	*Moraceae*	*3*
54	*Jasminum auriculatum*	*Oleaceae*	*1*
55	*Artabotrys hexapetals*	*Annonaceae*	*1*
56	*Cycas beddomi*	*Cycadaceae*	*1*

57	*Murrya koynegi*	*Rutaceae*	*4*
58	*Cinnamomum zylanicum*	*Lauraceae*	*2*
59	*Laurus nobilis*	*Lauraceae*	*2*
60	*Cardamom zylanicum*	*Zinzgibeaceae*	*2*
61	*Rauwolfia serpentina*	*Apocynaceae*	*1*
62	*Cambopogan citrus*	*Poaceae*	*1*
63	*Asparagus officinalis*	*Asparagaceae*	*1*
64	*Centella asiatica*	*Apiacea*	*2*
65	*Ocimum sanctum*	*Lamiaceae*	*1*
66	*Achyranthes aspara*	*Amaranthaceae*	*1*
67	*Curuma longa*	*Zingiberraceae*	*2*

Students of related subjects are actively involved in gardening, maintenance, etc. of gardens with in the campus. Further, they find the garden in apt place for discussions, combined studies, practicals, aesthetic purposes, spending leisure time, etc. Students are learning garden techniques by working in the garden with the help of teachers concerned. Garden make sample space and scope for them to conduct practicals including budding, grafting, lawn making, etc. for students of Botany and Environmental studies. They also find this as a good opportunity to observe and learn about birds and butterflies. Students from the department of Zoology learn about insects and their role in pollination by observing the Same in the botanical garden. So far,67 plants have been identified and maintained In the garden (Table–2).

Students of Botany are doing bee keeping and are learning the bee preference towards pants from the garden .Preparation of Vermi-compost and training on the same for those who are interested are conducted in the garden. There are enough resources (species of flora and fauna) available in different gardens and these resources are being utilized by the Botany and Zoology students for project works.

Table–2.Plants in the Botanical Garden

Sl. No	Name of Plants	Number of Plants
1	*Adenanthea pavonina*	1
2	*Adhatoda vasica*	3
3	*Aglaonema sp.*	10
4	*Allamanda cathartica*	5
5	*Anthurium species*	5

6	*Arachis pintoi*	>200
7	*Aralia sp.*	5
8	*Asparagus racemosus*	1
9	*Bambusa glaucophylla*	1
10	*Bauhinia tomentosa*	2
11	*Bauhinia variegata*	10
12	*Begonia sp.*	2
13	*Bougainvillea sp.*	30
14	*Cactu ssp.*	15
15	*Callistemon lanceolatus*	1
16	*Canna indica*	5
17	*Clematis elliptica*	2
18	*Clitoria ternatea*	2
19	*Cocos nucifera*	5
20	*Costu ssp.*	7
21	*Costus pictus*	2
22	*Crossandra infundibuliformis*	1
23	*Croto nsp.*	11
24	*Cupheaignea*	7
25	*Cycas circinalis*	1
26	*Datura metel*	30
27	*Dieffenbachia sanguine*	1
28	*Dracaena braunii*	2
29	*Dracaena fragrans*	3
30	*Duranta plumieri*	1

31	*Unrepentant*	2
32	*Ervatamia coronaria*	2
33	*Poinsettia pulcherrima*	1
34	*Gardenia gummifera*	3
35	*Gardenia jasminoides*	2
36	*Hamelia patens*	1
37	*Hibiscu srosa-sinensis*	3
38	*Holmskioldiasanguinea*	1
39	*Hypoestesphyllostachya*	3
40	*Ixora chinensis*	2
41	*Ixora philippinensis*	1
42	*Jasminum grandiflorum*	1
43	*Kopsia fruticosa*	1
44	*Lantana camara*	10
45	*Melastomam alabathricum*	5
46	*Murraya exotica*	2
47	*Nelumbium speciosum*	3
48	*Nerium indicum*	2
49	*Nymphaea pubescens*	2
50	*Osmoxylon lineare*	6
51	*Pachysta chyslutea*	4
52	*Pandanus odoratissimus*	2
53	*Passiflora sp*	1
54	*Piper longum*	1

55	*Piper nigrum*	3
56	*Plumeria indica*	1
57	*Quisqualis indica*	2
58	*Rivina humilis*	4
59	*Rosa sp.*	15
60	*Salvia officinalis*	2
61	*Sansevieria roxburghiana*	5
62	*Schefflera arboricola*	3
63	*Thevetia peruviana*	1
64	*Thuja sp.*	3
65	*Thunbergia laurifolia*	2
66	*Uvarianarum*	1
67	*Woodfordia fruticosa*	1
68	*TRICOPUS ZYLANICUS*	10

It would be nearly impossible to learn taxonomy and morphology for Botany students if plants are not available nearby. Different species of plants in the garden make this possible. Students are keen on maintaining species that are deal within their syllabus for practical and further observation.

The authorities are keen on developing the garden to higher levels by getting funds from sources such as spice board. The grants in aid were rightly spent on developing a spice garden with respective identification names and other details per training to the species in the spice garden.

The department of Botany and Eco Club initiated an agriculture garden where different species such as ginger, turmeric, chilli, etc are grown (Table3).The vegetables harvested from the vegetable garden are utilized in different messes or sell it out among the staff and students. A portion is shared among the volunteers.

Table–3.Vegetables and other Crop Plants

Sl. No.	Species of plants	Approximate Yield(kg)
1	*Abelmoschus esculentus*–*ladiesfinger*	30
2	*Amaranthus spp*–cheera	15
3	*Amorphophallu spaeoniifolius*–chena	50
4	*Benica sahispoida*–kumblanga	50
5	*Brassica oleracea*var.*boatrytis*–cauliflower	10
6	*Brassica oleraceavar.capitata*–cabbage	15
7	*Capcicum annum*–chilly	5
8	*Carica papaya*–papaya	20
9	*Coccinia grandid*–koval	1
10	*Colocasia esculenta*–chembu	50
11	*Cucumis sativus*–cucumber	1
12	*Cucurbita mellonia*–pumkin	1
13	*Curcuma longa*–turmeric	2
14	*Dioscorea alalta*–cherukizhangu	1
15	*Dioscorea esculenta*–kachil	90
16	*Lagenaria siceraria*–bottlegourd	1
17	*Lycopersicum esculentum*–tomato	10
18	*Manihot esculenta*–tapioca	1

19	*Momordica charantia*–bittergourd	1
20	*Moringa oleifera*–drumstick	5

Fruit Yielding Plants

Currently, in Andhra pradesh, there is a trend in cultivation of different species of fruit yielding plants in farms and orchards. Sir. C. R. Reddy college for women isalsogivingemphasisinaddingnewspeciesandvarietiesofdifferentfruityieldingplants in their campus. This would add value and awareness among students and staff about such plants. There are about 10 different fruit yielding species are available in the campus.(Table – 5)Although the fruit yielding species are cultivated at different places in a scattered manner, they are properly labeled and displayed.

Table–5.List of Fruit Yielding Plants

Sl. No.	Species of plants	Number of Plants
1	*Ananus comosus*	5
2	*Annona muricata*	1
3	*Annona squamosa*	10
4	*Artocarpus integrifolia*	8
5	*Artocarpus hirsutus*	5
6	*Citrus limon*	4
7	*Garciniam angostana*	3
8	*Hylocereus undatus*	2
9	*Mangifera indica*	15
10	*Morus alba*	2
11	*Musa paradisiaca*	50
12	*Nephelium lappaceum*	2
13	*Phelium mutabile*	1
14	*Syzygium cumini*	5
15	*Psidium jamun*	150
16	*Emblica officinalis*	5
17	*Phyllanthus emblica*	5

19	*Alpinia calcarata*	6
20	*Alpinia galanga*	3
21	*Alstonia scholaris*	4
22	*Andrographis paniculata*	2
23	*Anisomeles indica*	6
24	*Asparagus racemosus*	2
25	*Azadirachta indica*	3
26	*Bacopa monnieri*	4
27	*Biophytum sensitivum*	3
28	*Boerhavia diffusa*	5
29	*Butea monosperma*	2
30	*Calotropis gigantea*	2
31	*Cardiospermum halicacabum*	5
32	*Careya arborea*	8
33	*Cassia fistula*	4
34	*Cassia occidentalis*	2
35	*Catharanthus roseus*	3
36	*Centella asiatica*	6
37	*Chasalia curviflora*	3
38	*Cinnamomum zeylanicum*	6
39	*Clerodendrum viscosum*	3

40	*Clitoria ternatea*	5
41	*Cocos nucifera*	2

The diversity of medicinal plants in any place, especially in an academic campus is indicative the emphasis that the institute given towards traditional knowledge. This would be a platform for awareness, learning, and source for local usage. Sir. C.R .Reddy college for women is maintaining a medicinal plant garden that consists of a good wealth of plant species. The present status of flora that have medicinal importance is representative of regional and local Floristic diversity. About 89plantspeciesin the medicinal plant garden were found maintained on the campus (Table–6).

Table–6.MedicinalPlants

Sl. No.	Name of Plants	No. of Plants
1	*Achyranthes aspera*	2
2	*Adenanthera pavonina*	5
3	*Adhatoda vasica*	1
4	*Aerva lanata*	6
5	*Aloe vera*	20

6	*Coriandrum sativum*	3
7	*Costus pictus*	4
8	*Curcuma longa*	1
9	*Cyca scircinalis*	2
10	*Datura metel*	30
11	*Datura stramonium*	5
12	*Diospyros sp.*	4
13	*Duranta plumieri*	5
14	*Eclipta alba*	2
15	*Elephantopus scaber*	2
16	*Elettaria cardamomum*	3
17	*Emblica officinalis*	2
18	*Emelia sonchifolia*	3
19	*Euphorbia hirta*	2
20	*Evolvulus,alsinoides*	2
21	*Ficus benghalensis*	4
22	*Ficus microcarpa*	4
23	*Ficus racemosa*	3
24	*Ficus religiosa*	2
25	*Garciniam angostana*	5
26	*Heliotropium indicum*	2
27	*Hemidesmus indicus*	1

28	*Hibiscus rosa-sinensis*	3
29	*Holoptelea integrifolia*	6
30	*Holarrhena antidysenterica*	4
31	*Hopea parviflora*	8
32	*Ipomoea sepiaria*	3
33	*Ixora coccinea*	6
34	*Kaempferia galangal*	5
35	*Lannea coromandelica*	4
36	*Leucas aspera*	2
37	*Mimosa pudica*	3
38	*Murraya koenigii*	2
39	*Myristica fragrans*	5
40	*Nelumbium speciosum*	3
41	*Ocimum basailicum*	5
42	*Ocimum sanctum*	4
43	*Oxalis corniculata*	2
44	*Phyllanthus niruri*	3
45	*Pimenta dioica*	6
46	*Piper longum*	5
47	*Plumbago rosea*	2
48	*Pongamia pinnata*	3
49	*Psidium guajava*	4
50	*Rauvolfia serpentina*	10

51	*Rosa indica*	3
52	*Sansevieria roxburghiana*	1
53	*Saraca indica*	3
54	*Scoparia dulcis*	1
55	*Strobilanthes ciliatus*	2
56	*Strychnos nuxvomica*	3
57	*Syzygium aromaticum*	2
58	*Terminalia catappa*	5
59	*Tinospora cordifolia*	6
60	*Tragia involucrata*	4
61	*Tridax proccumbens*	2
62	*Vateria indica*	3
63	*Vernonia cinerea*	5
64	*Vitex xnegundo*	2
65	*Zingiber officinale*	*2*
66	*Duranta repens*	*30*
67	*Rauwolfia serpintina*	*5*
68	*Catharanthus roseus*	*30*
69	*Spathiphyllum*	*1*
70	*Theoretic alperuvian*	*1*
71	*Neolamackia cadamba*	*1*
72	*Bryophyllum*	*1*
73	*Couroupi taguianesis*	*2*
74	*Elettaria cardamomum1*	*1*
75	*Andrographis paniculata*	*1*
76	*Leucas aspera*	*1*
77	*Indigofera tinctoria*	*1*
78	*Lavanga tulasi*	*1*
79	*Adanthoda vasica*	*1*
80	*Curcuma longa*	*1*

81	*Centella asiatica*	2
82	*Curcuma amada*	1
83	*Asparagus officinalis*	1
84	*Mentha specta*	
85	*Alovera*	
86	*Himidismis indica*	1
87	*Piper betel*	1
88	*Piper longum*	1
89	*Ficus religiosa*	1
90	*Azadiractha indica*	30
91	*Chamaecostuscus pidatus*	10
92	*Neolamackia cadamba*	1
93	*Ocimumtenui florum*	5
94	*Ocimumbasilicum*	5
95	*Crosindra infundibuluformis*	10
96	*Zingiber officinale*	1
97	*Trachysperomum ammi*	10
98	*Annona muricata*	5

4.5.1.1.

Several significant and fruitful awareness programs both students and staff of the campus are arranged every year in the campus. Reflections from students are evident how effective swach awareness programs conducted in the campus.

Major programs conducted in the campus during the last years are:

Environment Related

1. Nature camps.
2. Field visits to different types of ecosystems.
3. Observances of environment Day, pollution day, Ozone day etc
4. Arranging seminars and symposiums on awareness and conservation by natural systems.

Conservation Activities

5 Collection and distribution of saplings.

6 Bird and Butterfly watching.

7 Sapling Planting etc.

Best Practices

8 2021-2022 organic farming of Guavajava

9 Engaging students in maintaining spices garden

10 Engaging students in maintaining herbal garden and medicinal garden.

11 Maintaining of *shanthistal*

12 Participation of teachers in different orientation program

13 Initiation of vermi-compost.

Trainings and Workshops

14 Hands on training on organic forming

15 Work shop on eco-friendly carry bags

Campaigns

16 Plastic free campaign

17 Nature camps, field trips and

Of these activities are year round programs and others are regular year wise or semester wise or any other stipulated time bound programs. This indicates that students and teachers concerned are actively involved in green activities in the campus.

4.4.2. Water Management

4.4.2.1. Major Findings.

1. water resources in the college are well maintained.
2. Separate tanks were installed for different blocks and for different purposes. This
3. enables to use water with maximum potential control.
4. The college has rain water harvesting mechanism which is to be appreciated.
5. This will help generate awareness about the importance of water conservation
6. and shall act as a model system to be followed by other institutions as well.
7. Wick irrigation farming and drip irrigation systems present in the campus were
8. found to be effective in reducing the amount of water used in agriculture sector.
9. The college organizes awareness programmes on water conservation frequently
10. to spread the message of significance of conserving water.
11. Students who are involved in green committees are doing a good job in water
12. related awareness programmes.
13. 92304 L of water is used per day by the college for its different uses (Table - 7).
14. 200 L of water per day is lost through the leaking of pipes (Table - 7).

15. The water consumption in the summer season is significantly high compared toother months.

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Table-7.Details of water analysis of sir CR Reddy College for women

Activity	Average use per activity in liters	Number of activity/day	Water use/person/day(L)	Number of persons using water	Total water consumption/day(L)
Washing hands and face	6L	thrice	2L/head	3009	18054L
Bath	60L	twice	30L/head hostel only	390	23400L
Washing clothes	20L	once	20L/head hostel only	390	7800L
Toilet flush	10L	atleast3	10L/head	500	5000L
Leaking/dripping(1drop/second/day)	Nil	nil	nil	nil	200L

Garden use	1500L	twice	nil	nil	3000L
Cooking(average)	3000L	four times	nil	500	12000L
Cleaning Floor	10000L	once	nil	nil	10000L
Cleaning college bus	Nil	nil	nil	nil	nil
La buses	2.5L	twice	5L	360	850L
Constructio n work	3000L	twice	nil	nil	6000L
Any other activity	3000L	twice	nil	nil	6000L
Total water use	20,598.5L	22 times	32,318	5,149	92304L

4.1.1.1. Suggestions

- There is no particular mechanism to find the water wastage. This has to be deal with utmost care without delay and has to be included in the future action plan.
- There is no water consumption monitoring system in the college.
- The college does not have waste water treatment for waste water generated from laboratories, canteen, hostel kitchen, toilets, bathrooms and office rooms.
- The waste water from canteen and kitchens is not suitably controlled and is not used for gardening. This has to be addressed and suitable action plans have to be evolve
- No adequate facilities available in the college to treat the waste water from chemical laboratories.
- Water fountain in the college was found to be dis functional. This need to be activated.

4.4.4. Carbon Footprint Audit

The most common greenhouse gases are carbon dioxide, water vapour, methane, nitrous oxide and ozone. Of all the greenhouse gases, carbon dioxide is the most prominent green house gas, comprising 402 ppm of the Earths atmosphere. Each human being is contributing towards adding green-house gases to the atmosphere depending upon his day to day activities and usage of instruments and machineries for different purpose. Release of carbon dioxide gas into the Earths atmosphere through human activities is commonly known as carbon footprint. An understanding about the same of any institute where large number of anthropogenic activities are happening is important to assess the contribution of emission of gases that are responsible for Green House Effect. Auditing for carbon footprint of Sir c. r. reddy college for women Campus was done using a
detailed questionnaire, so that the impact of the community on global environment can be assessed.

4.4.4.1. Major Findings

1. Total number of Students - 1695
2. Total number of Teachers -87
3. Number of non-teaching staff -70
4. Number of persons using cars - 2 (2L fuel per day)
5. Number of persons using two wheelers - 104 (50L fuel per day)
6. Number of persons using public transport - 1539, 21 km per day, average (180 L of fossil fuel per day)50
7. Number of cycles used in the campus- 10
8. LPG usage - 77.5 Cylinders per month
9. Total fossil fuel usage per day - 232 L, apart from LPG and fuel for generators

It is evident that majority of the campus community are relying on public transport system for commutation leading to the expense of 180 L of fuel per day. This shall be considered as a very conservative approach. Assuming that 20 persons travel together combined with number of motorcycles and cars lead to the usage of 232 L of fuel per day. This causes the emission of about 602 kg of CO2 per day. This measurement is excluding the natural emission of Co2 by human by breathing (ie. 1140g/day). Consumption of one litre LPG releases about 1.5kg of CO2. At the rate of 77.5 cylinders per month the college is using about 1085 L of LPG that releases 1627.5kg CO2 per month. Since there is no data from similar institution available a comparison of carbon footprint is not attempted.

Chapter-5
Recommendations

5.1.General recommendations

1. All the lists of plants shall be uploaded in the college site.
2. A file shall be maintained to assess and analyse the usage of garden by different stake holders.
3. There shall be a digital platform where students and staff shall get details about plants and animals in the campus. This may include name, information of systematic position as per standard classifications, usage, value, further references, etc.
4. The name boards shall be updated with QR code technology that enable the students and staff to scan the QR code to access relevant information of the taxa.
5. There shall be a discussion forum in the campus where a discussion on green activites is possible by students, alumni, staff, etc. and them operator of the group shall update the information in the digital repository accordingly.
6. Students and staff shall take initiative to start live campus discussion groups where green conservation and awareness shall be the main agenda.
7. The deliberations shall be shared among students and other stake holders through campus/social media.

5.2Water Management

8. Strengthening awareness on water conservation among student and teacher communities.
9. ‘Save Water’ posters to be affixed in the classrooms, hand washing areas.
10. Repair water leaks and leaky toilets immediately.

11. Install water aera tools and automatic shut-off devices on faucets.
12. Use low-flow shower heads and timer shut-off devices with automatic sensors to reduce water use during showers.
13. Bring a water bottle to college. At the end of the day, any left over can be poured on to the garden.
14. Set up an efficient water recycling system in the college canteen.
15. Install more rain water harvesting systems.
16. Install waste water system for chemistry labs.
17. Use green solvents and green methods (e.g.,double burette titration) in the chemical laboratories.

3.5. Energy Management

1. The on grid solar power plant can bring down electricity costs and might prove to bring in financial benefits in the long run .Being at a relatively highly in area of the town, there would be no issues with sunshine, particularly in summer.
2. Gradual replacement of existing on LED based lights to LED scan further bring down costs for lighting.
3. Replacement of existing electric fans with BLDC fans can significantly reduce power consumption and help in a good reduction in electricity charges.
4. Instead of using desktop work stations, we could consider desktop virtualization, wherever possible which could lead to reduce power consumption and reduced power costs.

Chapter-6

Future Action Plans

1. Year wise internal audit on green, water and energy to be conducted by respected teachers.
2. Proper management and month wise mapping of water and energy usage to be conducted by monitoring the same in the records.
3. Department wise awareness programs to be organized by department staff representative to each committee.
4. Proper waste water management
5. Proper monitoring and disposal of waste discharge from chemical laboratories
6. Implementation of sign boards and indications of water and energy usage.
7. Energy maintenance by proper usage of electrical appliances.
8. A timber garden and museum to be implemented
9. Vegetable and agriculture crop planting has to be increased using advanced technologies.
10. Promotion of visit to agriculture farmlands and processing centres.
11. Marketing of vegetables and crops cultivated in the campus.

The students and staff who are active in green related activities have a clear vision about how and what should be planned for a greener campus. They think that planting of more saplings during the world environment day would cater more awareness and enthusiasm in students who join a fresh each year. The college is also planning to initiate plant a tree/adopt a tree program where each student will be planting a sapling and taking care of it during his or her stay in the college. Although the college follow a university curriculum by implementing several such awareness program in their academic and non-academic activities promote more students turn to green activities

6.1 Conclusions

1. The management and other authorities are keen to make the campus a green campus
2. Sir CR Reddy College for women is making learning process by practical approach. This is fulfilled by setting different types of gardens, arboretum concept based garden and conservation of water and energy.
3. Staff and students are aware about the commitment of the institute towards the society.
4. Green audit at times makes the campus authority to understand the effect of implications towards greenness and conservation of water and energy.
5. The evaluation process proved that the authorities have applied implications suggested in the previous audit.
6. The campus community functions are oriented with an eco-friendly approach that enables the student community to develop a genuine approach on conservation of nature, and natural resources.
7. The results presented in the present report would be helpful for the authorities to make future action plans to develop more sophisticated ideas in bringing more values in future efforts towards conservation of biodiversity, water and energy.
8. We, the Divisional forest team , submitting the comprehensive audit report to the authorities of Sir C R Reddy College for women Campus. We hope the audit finding would help them implement better management plan to achieve a complete green campus, save maximum water and energy for a better future.

We suggest the college management to conduct the next audit after three years, ie. March 2026. This would help them understand whether they are heading forward by achieving the set for the plans and goals.

Acknowledgments

The Dr Sunkavalli Go veyavasaya vignana samithi Nachugunta Audit team thanks the Management and the Principal of Sir. C. R .Reddy, for entrusting us the green audit of their campus. We whole heartedly thank the teaching and non-teaching staff and students for their timely support rendered to the green audit team at different stages of the process that helped us to complete the audit in time. We also thank heads of various departments and the teacher in charge from each department for sharing documents and information in time. The support from different clubs and flora was adequate and timely. We thank the teacher and student coordinators of different clubs and flora for the same. The support from the office staff during visit to the campus for verification of documents is also highly appreciated.

PHOTOS

. REMOVEL OF WEEDS BY STUDENTS

Botanical garden maintenance by students

MEDICINAL PLANTS

Curcuma amada

Centella asiatica

Cymbopogon citratus

Clitoria ternata

Bryophyllum pinnatum

Annexure–I

Green auditing of Sir C R Reddy College for women,

Eluru

Questionnaire for Green campus management

1. Is there a garden in your college? Area?
2. Is there concept based garden (star plants, medicinal plants, endemic species, agriculture, etc.), specify area for each.
3. Do students spend time in the garden? If so, approximate time and purpose. (Lists with priority Annexure-I).
4. List the plants (scientific names,Family,etc.) in the garden, with approx. .numbers of each species (Annexure-II).
5. Listofcampusflora(attachalistofplantswithdetails,includingscientificname,family,approximatenumberofplants,etc.) inyour campus
6. Name and number of the medicinal plants in your college campus.
7. Any threatened plant species planted/conserved (provide a list with their threat status).
8. List the plants to be planted on your campus in the next three years. **(Trees, vegetables, herbs, etc.)**
9. List the species planted by the students, with numbers (Annexure–III).
10. Have you go any external funding for developing gardens in the campus? If yes, year, agency, and amount of funding.
11. Explain how you utilized funds for gardens.
12. Whether you have displayed scientific names of the plants in the Campus?
13. What are the vegetables cultivated in your vegetable garden? (Mention the quantity of harvest in each season).
14. How much water is used in the vegetable garden and other gardens?
15. Mention the source and quantity of water used(per month).
16. Are you using any type of recycled water in your garden?

17. Who is in charge of gardens in your college?

18. Is there any permanent staff to look after gardens in the campus?

19. List the name and quantity of pesticides and fertilizers used in your gardens?

20. Are you doing any organic practice in your campus? List them?

21. Do you have any composting pit (specify what compost)in your college? If yes, what you do with the compost generated?

22. Do you have a vegetable garden on the campus?

23. If yes, how the harvested vegetables are utilized? Do you have any market in the campus?

24. Is there any True club in your college? If yes what are the activities?

25. Is there any arboretum in your college? If yes detail soft trees planted.

26. Is there any fruit yielding plants in your college? If yes details of the trees planted.

27. Is there any groves in your college? If yes details of the trees planted.

28. Is there any irrigation system in your college?

29. What is the type of vegetation in the surrounding area of the college?

30. What are the nature awareness programs conducted in the campus?(2014-19).Provide a list(annexure-IV)

31. What are the involvement of students in the green cover maintenance?
Planting saplings and maintenance

32. What is the total area of the campus under tree cover? Or under tree canopy?

33. Share your future plans for further improvement of green cover.

34. Have you in corporated green conservation aspects in your curriculum?

35. How often you conduct public programs on green conservation?

36. Do students reach out to the public in conveying the message of nature conservation?

Annexure–II

Green auditing of Sir C R Reddy College for women, Eluru

Questionnaire for Water Management Auditing

1. What is the total Area of the campus?
2. Number of total teachers, non-teaching staff and students in the campus.
3. Provide a list with different uses of water in the campus (Annexure2-I).
4. Name different sources of water in your college?
5. How many wells are there in your college?
6. Number of electric motors used for pumping water from each well?
7. What is the total horse power of each motor?
8. What is the depth of each well?
9. What is the present depth of water in each well?
10. How does your college store water?
11. Capacity of the overhead water tank/sin the campus?(in litres)
12. Quantity of water pumped every day?(in litres)
13. How do you justify that the water usage is judicious in the campus?

14. Is there any water wastage? If yes, specify why and how.
15. Is there any mechanism to identify water wastage in the campus, explain(Annexure2-II)
16. What are the possible ways to check wastage of water?
17. Is there any waste water generation happening in the campus?
18. What are the possible sources of waste water in the campus?
19. Where does the waste water go?
20. Are you reusing the waste water after recycling it?

21. What are the systems of management of water used in your labs, especially Chemistry lab (or labs where experiments are happening involving chemicals)?
22. Does this water get mixed with ground water?
23. Is there any treatment for the lab water after usage?
24. Is there a system of practice of green chemistry in your campus? Give details.

25. Write down four ways that could reduce the amount of water used in your college.

26. Record of water use from the college water meter for six months.
27. Amount, if any, as charges towards water paid for water connections.
28. Number of water coolers in the campus. Amount of water used per day?(in litres)
29. Number of water purifiers in the campus, if any.
30. Number of water taps in the campus. Amount of water used per day?
31. Number of bathrooms and toilets separately for staff rooms, common, hostels (Annexure2-III).
32. Number of toilets?
33. Amount of water used per day in the toilets?
34. Number of water taps in the canteen. Amount of water used per day?
35. Amount of fire-wood used in the canteen kitchens?
36. How much ash collected after burning fire wood per day in the canteen?
37. Amount of water used per day for irrigation purpose.
38. Number of water taps in laboratories. Amount of water used per day in each lab?
39. Number of taps in hostels.
40. Total use of water in each hostel?
41. Provide a list of month wise water usage in different areas in the campus
42. Is there any water used for agricultural purposes?
43. Is there any rain water harvest system in the campus? If yes, details of the storage capacity?
44. Report on the status of their functioning.
45. Provide number of damaged taps in the campus? Amount of water lost due to damaged taps or water supply system per day?
46. How do you convey the message of water conservation in the campus?
47. How many water fountains are there?_____

48. How often the garden is getting irrigated?
49. Amount of water used to water the ground?
50. Amount of water used for college us cleaning?(litres per day)
51. Is there any other way by which water is being utilized?.
52. Area of the college land which is under concrete tiles.
53. Is there any future plan for the water management in the campus?
54. Are there any water saving techniques followed in your college? Explain?
55. Is there any mechanism by which message on water conservation is been conveyed to staff and students.

Annexure–III

Green auditing of Sir C R Reddy College for women, Eluru

Questionnaire for Energy Management Audit

1. Listoutwaysofenergyusageinthecampus.(Electricityelectricstove,kettle,microwave,incinerator;LPG, firewood, Petrol, diesel and others).
2. Electricity bill amount for the last three years.
3. Amount paid for LPG cylinders for last three years.
4. Any other payments towards energy related matters for last three years in the campus
5. Weight of fire wood used per month and amount of money spent? Also mention the amount spent for petrol/diesel/others, if any?
6. Are there any energy saving methods employed in your college? If yes, please specify.
7. What are the types of bulbs used in the campus?
8. Provide a list of number of bulbs of each types.
9. Provide the total energy utilization by each types of bulb per month.
10. How many CFL bulbs has your college installed? Mention use (Hours used/day for how many days in a month)
11. Energy used by each bulb per month?(Forexample-60 watt bulb x 4hours x number of bulbs =kWh).
12. How many LED bulbs has your college installed? Mention use (Hours used/day for how many days in a month)
13. How many in candescent(tungsten)bulbs has your college installed? Mentions use (Hours used/day for how many days in a month)
14. How many fans installed in the campus? Mention use (Hours used/day for how many days in a month)
15. Energy used by all fans per month?(kwh)
16. How many air conditioners are in use in the campus? Mention time of their usage (Hours used/day for how many days in a month).
17. Energy used by all air conditioners per month?(kwh).
18. How many electrical equipments including weighing balance used in the campus? Mention use(Hours used/day for how many days in a month)
19. Energy used by each such electrical equipment per month?(kwh).
20. How many computers were in use in the campus? Mention the energy use. (Hours used/day for how many days in a month)

21. Energy usage by all computers per month?(kwh)
22. How many photo copier machines are installed and in use at present in the campus? Mention use(Hours used/day for how many days in a month).
23. Energy used by all photocopier per month? (kwh) Mention use (Hours used/day for how many days in a month)
24. How many cooling apparatus present in the campus? Mention use(Hours used/day for how many days in a month)
25. Energy used by all cooling apparatus per month? (kwh)Mention use(Hours used/day for how many days in a month).
26. How many inverters your college installed? Mentions use(Hours used/day for how many days in a month)
27. Energy used by each inverter per month?(kwh)
28. electrical equipment How many used in different labs(methods that are not included in the above calculations) in the campus? Mentions use (Hours used/day for how many days in a month)
29. How many electrical equipments are available in all labs in the campus?
30. Energy used by all equipments together per month?(kwh)
31. How many heaters used in the canteen of your college? Mention their use(Hours used/day for how many days in a month
32. Energy used by each heater per month?(kwh)
33. Number of street lights in your college?
34. Energy used by all street lights per month?(kwh)
35. Number of televisions in your college and hostels?
36. Energy used by all TVs per month?(kwh)
37. Any other items that uses energy (Please write the energy used per month) Mention the application (Hours used/dayfor how many days in a month)
38. Does the campus have any alternative energy sources/nonconventional energ y sources?(photo voltaic cells for solar energy,windmill,energy efficient stoves,etc.,)Specify.
39. Do you run“switchoff”drillsatcollege?
40. Are your computers and other equipment put on power-saving mode?
41. Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on stand by modes most of the time?If yes,how many hours?
42. What are the energy conservation methods adapted by your college?
43. Is there any public awareness systems informing necessity of energy conservation in ?
44. Write an Oteon the methods/practices/adaptationsbywhichyou canreducetheenergyuseinyourcollegecampusin future.

Green Auditing of Sir C R Reddy College for women

Questionnaire for Carbon footprint Auditing

1. Total number of students and teachers in your College?

Gender	No of students	No of Teachers	No of non-teaching staff
Male			
Female			
Transgender			
Total			

2. Total Number of vehicles used by the stake holders of the college/per day.

3. No.of cycles used/day in the campus.

4. No. of two wheelers used (average distance travelled, cc of two wheelers and quantity of fue land amount used/day).(C.F-Annexure-I).

5. No. of cars used (average distance travelled, power of engine (cc) and quantity of fuel and amount used/day).(C.F-Annexure-II).

6. No. persons using common (public) transportation (average distance travelled and quantity of fuel and amount used/day).

7. No.of persons using college conveyance (general transportation) by the students, non teaching staff and teachers (average distance travelled and quantity of fuel and amount used per day)

8. Number of parent-teacher meetings in a year?Parents turned up(approx.)

9. Mention their mode of travel and give approximate cost of their commutation.

10. Number of visitors with vehicles per day?

11. Number of generators used/day (hours).Provide quantity and amount for fuel usage/ day.

12. Number of LPG cylinders used in the campus. Provide quantity and amount of fuel used/day.

13. Quantity of kerosene used in the canteen/labs (Provide quantity and amount of fuel used per day and amount spent).

14. Amount of taxi/auto charges paid and the amount of fuel used per month for the transportation of vegetables and other materials to the campus.

15. Amount of taxi /auto charges paid per month for the transportation of office goods to the college.

16. Amount of taxi /auto charges paid per month by the stake holders of the college.

17. Use of any other fossil fuels in the college (Give the amount of fuel used per day and amount spent). (C.F-Annexure-III).

18. What are the methods you might adopt in the future to reduce the quantity of fuel used by the stake holders /students /teachers/ non-teaching staf of the college.

Audited by

DIVISIONAL FOREST OFFICE SOCIAL FORESTRY DIVISION

ELURU

Principal
Sir C.R.Reddy College for Women
ELURU

GREEN AUDIT REPORT

2020-2021

Prepared by

DEPARTMENT OF BOTANY

SIR C. R. REDDY COLLEGE FOR WOMEN,ELURU

Affiliated to ADIKAVI NANNAYA UNIVERSITY (Rajamahendravaram)

FRONT VIEW OF COLLEGE

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CONCLUSIONS

ACKNOWLEDGEMENTS

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2.B. RAMAKRISH NA RAO	FIELD OFFICER
3.B. BHUPATHI RAJU	FIELD OFFICER

GREEN AUDIT CERTIFICATE

This is to certify that

Sir C. R. Reddy College for Women

has successfully undergone and the Environmental Audit and meet the standards during the Green Audit 2020-2021

Approved by

Dr. Sunkavalli
Govyavasaya Vijnana Samithi,
Nachugunta

29.04.2021
Date

G. Venkateswarlu
Signature

Zonal officer
in Organic Farming

Dr. SUNKAVALLY GOUVYAVASAYA
VIJNANA SAMITHI
NACHUGUNTA,
Unguturu Mandal, W.G. District.

CHAPTER-I: INTRODUCTION

About College

Eluru, the district headquarters of west Godavari is known for its historical background and as as center for educational institutions.The fore most Institution is Sir C Ramalinga Reddy College,located in sprawling campuses of about 100 Acces area administered by a trust consisting of nearly 300 members. It is a service oriented organization working on Non- profit Basis, giving importance to discipline,hard work and to work only for the development of the students both technically and morally

Trust members include many Educationalists, Industrialists and reputed politicians and statesmen who offer constantly moral and financial support.Sri. Mullapudi harischandra Prasad,Smt.Rajeswari Rama chandran ,the famous industrialist , Late Sri.L.V.Prasadha Rao (U.S.A),Sri S B P K Satyanarayana Rao Former union minister (M.P),Sri Bolla Ramayya (M.P), Late Sri. Maganti Ravindranath Chowdhury Former minister Govt of A.P. etc., Are among them .Sri Alluri Bapineedu former president of the educational society remains a Legendary figure in the development of the institution.

Sir. C.R R College society (Regt.No.10 of 1950) promoted an arts and science college which was inaugurated on 4th July 1945 by Sir cattamanchi Rama Linga Reddy the distinguished Educationalist andthe then Vice Chancellor of Andhra University**.**

Aim and Objectives of Green Audit

Clean and Green environment is a healthy environment. Any person can feel comfort, pleasant and peace of mind in clean and green environment, therefore teaching and learning is effective and provides a stress less learning environment. Green auditing is one among the various efforts around the world to address environmental education issues. Once a baseline is established, the data can serveas a point of departure for further action in campus greening. The main aim of the green audit is to study ground reality of different issues regarding environment such as water and power conservation, waste management, and clean & green in the campus. The main objective of the green audit is to promote the environment, management and conservation in the college campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The main objectives of carrying out Green Audit are

- To recognize, diagnose and resolve the environmental problems and secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus
- To minimize the consumption of water and energy consumption and provide baseline information to enable organization to evaluate and manage environmental change, threat and risk.
- To train all stakeholders of the organization and empower them to contribute and participate in the environmental protection and facilitate them with different aspects of disaster management
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requires high cost
- To identify the risks of hazards and implement the policies for safety of stakeholders and to set up procedure for disposal of all types of harmful wastes
- To bring out a status report on environmental compliance

Advantages of the Green Auditing

- To maintain greenery in campus
- To facilitate waste management through reduction of waste generation, solid- waste and water recycling
- To create plastic free campus
- To bring awareness in health consciousness among the stakeholders
- To provide a basis for improved sustainability
- To instruct environmental education through systematic environmental management approach and Improving environmental standards
- Financial savings through a reduction in resource use

CHAPTER-II: PRE-AUDIT

Introduction on green auditing

The systematic identification, quantification, recording, reporting and analysis of components of environmental diversity is called Green Audit. The main aim of 'Green Audit' is to analyze environmental practices within the college campus, which will have an impact on the eco-friendly ambience. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit.

Pre-auditing report

A pre-audit meeting was held on 29-04-2021 in our college campus. It gives an opportunity to gather documentation that the audit team can study before arriving on the site. The audit protocol and audit plan was handed over at this meeting and discussed in advance of the audit itself. The meeting provided an opportunity to reinforce the scope and objectives of the audit and discussions were held on the practicalities associated with the audit. The committee is decided to audit different areas like water management, energy management, waste management, management of hazardous materials etc. in our college campus.

Our Management has shown great interest and dedication towards green auditing during the pre-audit meeting. They encouraged all green activities such as awareness programmes on waste management, clean and green campus, minimization of e-waste and planting more trees on the campus etc. The management of the college will formulate policies based on the green auditing report. The management commitment is an indicator which addresses institutional commitment, governance, and investment policy. College administration is vital to the process of realizing campus sustainability, and college policy is an essential instrument for any substantial change in the campus environment.

Areas of green auditing

The study area includes degree college campus, botanical garden with 1 acres, intermediate block garden, college canteen, lawn, ground, PG block garden and etc. The study area was situated by the Co-ordinates **016º 42' 25.95"N, 081º 05' 12.83"E ; 016º 42' 20.79"N 081º 04' 9.5"E** The study area is very much eco-friendly of the Eluru Urban area and rich in trees and biodiversity. The Department of Botany is maintaining a Botanical garden of 1.5 acres. In this garden we are maintaining medicinal plants, floriculture plants and pomology. Plants are grown here for Botanical studies as a part of academics for both intermediate and degree. In this context the Department is maintaining and monitoring almost 58 medicinal plants and 125 potted ornamental plants along with ferns and plants like orchids.

.

Methodology

Green auditing was conducted during 12-05-2021 by our committee with the help teaching and non-teaching and NSS students. The green audit began to physical verification on different facilities at the college, determining the different types of appliances and utilities like lights, taps, toilets, fridges, etc. as well as measuring the usage per item (Watts indicated on the appliance or measuring water from a tap) and identifying the relevant consumption patterns (such as how often an appliance is used) and the impact that they have.

For our study convenience the entire college was divided into 8 blocks. Btanical garden, Entrance, Ground, Inter block, Garden, Canteen, Office room , PG Block,Gymnasium. Different audit groups interviewed office staff, Principal, Teaching and non-teaching staff, students, parents and other stakeholders of the college. Discussions were also made with the PTA office bearers to clarify doubts regarding certain points. Verified college documents such as admission registers, registers of electricity and water charge remittance, furniture register, laboratory equipment registers, purchase register, audited statements, and office registers. Collected college calendars, college magazines, annual report of the college and NAAC self-assessment reports, UGC report etc. The college and its premises were visited and analyzed by the audit-teams several times to gather information. Campus trees were counted and identified; play grounds, canteen, library, office rooms and parking grounds were also examined to collect data.

Finally discussions were made with the college management regarding their policies on environmental management. Future plans of the college were also discussed.

CHAPTER-III: ONSITE AUDIT OBSERVATIONS AND RECOMMENDATIONS

Auditing of Water management

Water is life, life without water can't imagine. After life gas oxygen, water component plays a vital role for beings. Our students and staff follow the best practice **"SAVE WATER-SAVE LIFE"**. Water, it is not only life; it is the backbone of economy of every country. Auditing of water management is an onsite survey which includes water sources, water consumption, irrigation, storm water, appliances and fixtures, and assessment to determine the water use and hence improving the efficiency of its use.

Observations

- ✓ The study observed that Well, Bore well and municipal irrigations are the two major sources of water.
- ✓ The data collected from all the departments is examined and verified and on an average the total use of water in the college is 25000 L/day, which include 7000 L/day for domestic purposes, 12000 L/day for gardening and 6000 L/day for different laboratories.
- ✓ Water is used for drinking purpose, canteen, toilets, laboratory and gardening.
- ✓ The students and staff use sufficient quantity of water and turned off taps immediately.
- ✓ College campus we have twenty five drinking water points, fifteen water points for hand wash and cleaning lunch boxes
- ✓ Seventy five urinal wash points and twenty five toilets.
- ✓ At most care is taken to flow water through pipes and reaches terminal points to fulfill our basic needs without any leakage
- ✓ Waste water is channeled into sock pits to improve ground water level.
- ✓ The waste water generated by RO Plant is being channelized into toilets.
- ✓ To make judicious use of water available, the college has installed several water sprinklers in garden areas.
- ✓ During the survey, no loss of water is observed, neither by any leakages, nor by over flow of water from overhead tanks.

Recommendations

- Monitor and control of overflow is essential and supervision is essential periodically.
- Recycle of water system is necessary to reuse the waste water if any
- Minimize wastage of water and use of electricity during water filtration process, if used, such as RO filtration process
- Ensure that all cleaning products used by college staff should be biodegradable and non-toxic.
- Install waste water system for chemistry labs
- Set up an efficient water recycling system in the college canteen
- Install rain two more water harvesting system
- Establish water, waste and energy management systems
- Increase the number of water taps and set up recycling of water system

Auditing of Energy

Auditing of Energy was taken up separately by the energy audit team (both Internal & External) addresses energy sources, energy monitoring, energy consumption, lighting, appliances and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

Auditing of Green Area

Plants produce oxygen and give shelter to organisms. They also used as medicines to cure various chronic diseases for animals and human beings. Plants produce wonderful therapeutic drugs to cure very dangerous and normal diseases. Here several scientists published number of research journals as the medicinal uses of plants. Green area auditing includes plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps in ensuring that the Environmental Policy is enacted, enforced and reviewed using various environmental awareness programmes.

Observations

- Huge number of variety of trees of age above 33 years is found in our college campus. Beautiful garden is being maintained in front of our college i.e. at the entrance.

- Botanical garden is being maintained at the Department of Botany which consists of lot of medicinal plants.
- Beautiful flower plants are planted either side of Pedestrian friendly roads.
- It was observed that, campus is located in the vicinity of approximately trees of different species, among them 65 are medicinal plants.
- Various tree plantation programs are being organized during the month of July and August at college campus through NSS unit which includes various type of indigenous species of ornamental and medicinal wild plant species.

FLORA OF SIR.C.R.REDDY COLLEGE FOR WOMEN

S.no	Scientific name	Commo nname	Family	Number ofplants
1	Ixora coccinia(alba)	Nuruvrahalu (white flowers)	Rubeacea	5
2	Ixora coccinia	Nuruvarahalu (orange)	Rubeacea	8
3	Laurus novluis	Ganneru (garden jasmine)	Apocynaceae	3
4	Polyalthia lomgifolia	Naramamidi		19
5	Ixora	Nuruvarahalu (yellow)	Rubeacea	6
6	Areca palm	Butterfly palm	Arecaceae	18
7	Agave inaquidence	Uneven teeth	Asparagaceae	5
8	Toxica Dendron vernix	Thunder wood	Anacardeacea	1
9	Phylanthus emblica	Amla	Phyalanthaceae	4
10	Aglaonema pictum	Artificial plant		27
11	Ixora	Nuruvarahalu (pink)	Rubeacea	2
12	Annona reticulata	Ramafalam	Annonaceae	4
13	Hibiscus rosa sinensis	hibiscus	malvaceae	5
14	Ixora	Dwarf ixora	Rubeacea	134

15	Nerium indica	Ganneru (light pink flower)	Apocynaceae	38
16	Azadi rakta indica	Neem	Meliaceae	44
17	Bouganvillia glabra	Paper flowers (pink)	Nictangiaceae	15
18	Bouganvillia	Paper flower (yellow)	Nictangiaceae	1
19	Ponagamia pinnata	ganuga	Fabaceae	12
20	Cocus neuc ifera	Coconut	Arecaceae	33
21	Tectona grandis	Teak	Verbinaceae	24
22	Pentophorum pterocartus	Copper pod	Fabaceae	25
23	Albizzia lebbeck	Sir ish flowers	Fabaceae	3
24	Mussaenda queen skit	Ornamental red leaves	Rubeacea	9
25	Bouganvillia	Paper flowers (orange)	Nictangiaceae	1
26	Calotropis gigantia	Jilledu	Apocynaceae	9
27	Nerium oleander	Nerium	Apocynaceae	24
28	Liriope muscari (chlophytum comosum)	Spider plant	Asparagaceae	42
29	Duranta repense	Sky flower , pigeon beery	verbinaceae	56
30	Catharanthus roses (Alba)	Billa ganneru	Apocynaceae	8
31	Mangifer indica	mango	Anacardiaceae	16
32	Ficus religiosa	Ravi	Moraceae	9
33	Manikara zapota	sapota	Sapotaceae	9
34	Eucalyptus	Jamayel	Mytaceae	1
35	Tamrindus indica	Tamarind plant	Fabaceae	1
36	Psidium guava	Jama	Mytaceae	10

37	Musa paradisiacal	Banana	Musaseae	10
38	Pterocarpus santalinus	Red sanders	Fabaceae	5
39	Gossypium herbaceum	Cotton	Malvaceae	1
40	Citrus limon	Lemon	Rutaceae	1
41	Tecoma stands	Ganneru	Dignoniaceace	3
42	Hamelia patens	Fire bush, red head	Rubeacea	6
43	Punica grantem	Pomogranete	Punicaceae	2
44	Lawsonia innermis	Henna plant	Lythraceae	2
45	Dalbargia sisso	Rose wood	Fabaceae	4
46	Bauhinia equminata	Bauhinia plant (Alba)	Fabaceae	8
47	Sapindus sabonaria	Soap nut plant	Sapindaceae	2
48	Gardenia taitensis	Ti are flower	Rubeacea	1
49	Calycophyllu m condissimum	Lemon wood	Rubeacea	1
50	Anona squamosa	Custard apple	Annonaceae	2
51	Embica officinalis	Goose berry	Phylanthaceae	3
52	Syzygium cumini	Malabal palm, java palm	mytaceae	4
53	Ficus elastica	Rubber tree	moraceae	3
54	Jasminum auriculatum	Chukka malli	oleaceae	1
55	Artabotrys hexa petalus	Boddu sampangi	annonaceae	1
56	Cycas beddomi	cycas	cycadaceae	1
57	Murrya koynegi	Curry leaf	rutaceae	4

58	Cinnamomum zylanicum	Dhalchina chekka	Lauraceae	2
59	Laurus nobilis	Bay leaf	Lauraceae	2
60	Cardamom zylanicum	Elachi	Zinzgibeaceae	2
61	Rauwolfia serpentina	Seven leaves plant	Apocynaceae	

TOATL PLANTS=801

Recommendations

- Planting of trees in every year in the campus
- Set up a nursery for plants to be distributed to the students
- Set up vegetable and medicinal plant gardens
- Reviews periodically the list of trees planted in the garden, allot numbers to the trees and keep records. Give scientific names to the trees.
- Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service.
- Create awareness of environmental sustainability and takes actions to ensure environmental sustainability.
- Establish a College Environmental Committee that will hold responsibility for the enactment, enforcement and review of the Environmental Policy. The Environmental Committee shall be the source of advice and guidance

Auditing of waste management

Waste production and disposal, plastic waste, paper waste, food waste and recycling comes under auditing of waste management. Solid waste has a number of adverse environmental impacts, most of which are well known and not in need of elaboration. Solid waste can be divided into two categories: general waste and hazardous waste. General waste includes what is usually thrown away in class rooms and roads such as paper, plastics tins and glass

bottles. Hazardous waste is waste that is likely to be a threat to one's health or the environment like cleaning chemicals and petrol.

Observations

- The possible ways of generation of solid waste in our college campus are from plants dry leafs, grass, food stuff, paper, glass, plastic, use and through pens, single use water bottles, water packets, single use poly bags, electrical, electronic and packing materials ect. The total solid waste collected in the campus is 50 Kg/day
- Early in the morning sweepers sweep the campus to make it clean and neat, during the process they collect and then separate the whole solid waste into biodegradable solid waste (plants dry leafs, grass, food stuff, paper), plastic and polymer waste (plastic, use and through pens, single use water bottles, water packets, single use poly bags) and electrical & electronic (e-waste)
- The biodegradable waste (except paper) is transferred to the Vermi-Compost unit maintained by the Departments of Zoology and Botany. In the duration of one and half month approximately 250 kgs of vermi-compost can be produced and is used as organic manure for plants in our college campus
- Paper waste in any form is collected and separated carefully, stored in bags and finally transferred to paper recycling unit
- Single sided used papers reused for writing and printing in all departments
- Very less plastic waste is generated by some departments, office, garden etc but it is neither categorized at point source nor sent for recycling
- Metal waste and wooden waste is stored and given to authorized scrap agents for further processing
- Segregation of chemical waste generated in chemistry and zoology laboratories is also practiced
- Few glass bottles are reused in the laboratories

Recommendations

- Set up a common waste water treatment plant
- Installation of more vermi culture and compost units
- Adopt an environment policy for the college

- Establish an e-waste collection centre
- Participation of students and teachers in local environmental issues
- Conduct seminars and workshops on environmental education
- Avoid plastic plates and plastic items in the college functions
- Introduce UGC environmental science course to all students
- Declare the campus plastic free and arrange awareness programmes to make the campus plastic free

Auditing of E-Waste Generation

E-waste can be described as consumer and business electronic equipment that is near or at the end of its useful life. This makes up about 5% of all municipal solid waste worldwide but is much more hazardous than other waste because electronic components contain cadmium, lead, mercury, and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.

Observations

- E-waste generated in the campus is very less in quantity
- E-waste includes discarded parts of electrical & electronic equipment such as parts of computer, printer, copier machine, burned electric bulbs, wires and any outdated machines
- The E- waste and defective item from computer laboratory is being stored properly
- The institution has decided to contact approved E-waste management and disposal facility in order to dispose E-waste in scientific manner

Recommendations

- Conduct seminars and workshops on environmental education
- Avoid plastic plates and plastic items in the college functions
- Introduce UGC environmental science course to all students
- Purchase of college bus exclusively for college students

CHAPTER-IV: POST AUDIT REPORT

1. Green auditing should be conducted by the College in every two years. College should also offer consultancy projects on environmental auditing for other academic and research institutions
2. Irrespective of the academic programmes, environmental education should be part of curriculum and for the under-graduate programmes, at least one credit on environmental education or sustainable development as elective should be made compulsory
3. Rainwater harvesting facilities may be established at both administrative and academic campuses, foreseeing future needs of water. Rainwater pits can be prepared at appropriate places identified with the assistance of Department of Geology and restoration activities may be initiated to sustain the health of ponds and wetlands in the campus
4. Specific waste management plans should be adopted to manage solid waste in the campus, with the assistance of State Suchithwa Mission and use of plastic carry bags, thermocole cups/plates and flex boards should be banned inside the college.
5. For managing organic wastes, biogas plants may be commissioned at the hostels, canteens, biochemistry department and staff quarters.
6. All the blocks in the Campus should develop a garden in front of the building and the expenditure for the same may be met from the College Development Fund.
7. Green habitat concept should be adopted for all the building construction activities of the college in future. Further, more green spaces should be established all around the campus around larger trees and shades for the benefit of the students.
8. Fire safety instruments should be installed in all the buildings.
9. More public toilets/e-toilets may be established in the campus and in hostels; separate toilets are required for differently abled students.
10. Considering contamination of water with coliform bacteria, water purification treatment facilities may be installed within the campus in order to ensure safe drinking water.

BOTANICAL GARDEN MAINTAINED BY THE STUDENTS

Pruning the portchulaca

Watering to plants

Weeds removel in banana plantation

SOME OF MEDICINAL PLANTS IN BOTANY GARDEN

Bryophyllum pinnatum

Asparagus officinalis

Cymbopagan citratus

Centella aceatica

Conclusions

Green audit or environmental audit should be implemented strictly. It is a continuous process. Management, administrative staff, teaching & non teaching staff and stakeholders should understand the process of environmental auditing, importance and impact of green auditing. Though academic institutes take part in restoring the environment, still there is scope for the further action.

Acknowledgements

The audit committee sincerely thanks the principal, vice principal and IQAC coordinator for their support in entire onsite auditing. We are thankful to head of the departments and college staff for providing us necessary facilities and co-operation during the audit. We are also very much thankful to all office staff for providing required data time to time which helped very much in making the audit, a success.

INTERNAL AUDIT TEAM			
S. No	**Name**	**Designation**	**Signature**
1	**Smt.P.Sailaja**	Principal	
2	S.Anuradha	Coordinator, IQAC	
4	B.Tulasi Koteswari Bai	HOD, Dept. of Chemistry	
5	T. Vijaya Durga	Lecturer in Botany	

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Principal
Sir C.R.Reddy College for Women
ELURU

EXTERNAL AUDIT TEAM			
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2	**B. RAMAKRISHNA RAO**	FIELD OFFICER	B. Ramakrishna Rao
3	**B.BHUPATHI RAJU**	FIELD OFFICER	B. Bhupathi Raju

Principal
Sir C.R.Reddy College for Women
ELURU

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GREEN AUDIT REPORT

2019-2020

Prepared by

DEPARTMENTOFBOTANY

SIRC.R.REDDY COLLEGE FOR WOMEN,ELURU

Affiliated to ADIKAVI NANNAYA UNIVERSITY (Rajamahendravaram)

FRONT VIEW OF THE COLLEGE

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LEDGEMENTS

INTERNALAUDITTEAM

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2. B.RAMAKRISHNA RAO	FIELD OFFICER
3.B.BHUPATHI RAJU	FIELD OFFICE

CERTIFICATE

ENVIRONMENT AUDIT CERTIFICATE

This is to certify that

Sir C. R. Reddy College for Women

has successfully undergone and the Environmental Audit and meet the standards during the Green Audit 2019-2020

Approved by
Dr. Sunkavalli
Govyavasaya Vignana-Samithi,
Nachugunta

01.05.2020
Date

G. Venkata Ratnam
Signature

Zonal officer
in Organic Farming

Dr. SUNKAVALLY GOU VYAVASAYA
VIJNANA SAMITHI
NACHUGUNTA,
Unguturu Mandal, W.G. District.

CHAPTER-I:INTRODUCTION

About College

Eluru, the district headquarters of west Godavari is known for its historical background and as as center for educational institutions. The fore most Institution is Sir C R Reddy College for women ,located in sprawling campuses of about100Accesareaadministeredbyatrustconsistingofnearly300 members. Itisa service oriented organization working on Non- profit Basis, giving importance to discipline, hard work andtoworkonlyforthedevelopmentofthestudentsbothtechnicallyandmorally

Trust members include many Educationalists, Industrialists and reputed politicians and statesmen who offer constantly moral and financial support. Sri. Mullapudi harischandra Prasad,Smt. Rajeswari Ramachandran ,the famous industrialist , Late Sri.L.V.Prasadha Rao (U.S.A),Sri S B P K Satyanarayana Rao Former union minister (M.P),Sri Bolla Ramayya (M.P), Late Sri. Maganti Ravindranath Chowdhury Former minister Govt of A.P. etc., Are among them .Sri Alluri Bapineedu former president of the educational society remains a Legendary figure in the development of the institution.

Sir. C.R R College society (Regt.No.10 of 1950) promoted an arts and science college which was inaugurated on 4th July 1945 by Sir cattamanchi RamaLingaReddy the distinguished Educationalist and the then Vice Chancellor of Andhra University.

Aim and Objectives of Green Audit

Clean and Green environment is a healthy environment .Any person can feel comfort, pleasant and peace of mind in clean and green environment, there fore teaching and learning is effective and provides a stress less learning environment. Green auditing is one among the various efforts around the world to address environmental education issues. Once a baseline is established, the data can serve as a point of departure for further action in campus greening. The main aim of the green audit is to study ground reality of different issues regarding environment such as water and power conservation, waste management, and clean & green in the campus. The main objective of the green audit is to promote the environment, management and conservation in the college campus. The purpose of the audit is to identify, quantify, describe and prioritize frame work of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The main objectives of carrying out Green Audit are

- To recognize, diagnose and resolve the environmental problems and secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus
- Tominimizetheconsumptionofwaterandenergyconsumptionandprovidebaselineinformation to enable organization to evaluate and manage environmental change, threat and risk.
- To train all stakeholders of the organization and empower them to contribute and participate in the environmental protection and facilitate them with different aspects of disaster management
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requires high cost
- To identify the risks of hazards and implement the policies for safety of stakeholders and to set up procedure for disposal of all types of harmful wastes
- To bring out a status report on environmental compliance

Advantages of the Green Auditing

- To maintain greenery in campus
- To facilitate waste management through reduction of waste generation, solid-waste and water recycling
- To create plastic free campus
- To bring awareness in health consciousness among the stake holders
- To provide a basis for improved sustainability
- To instruct environmental education through systematic environmental management approach and Improving environmental standards
- Financial savings through are reduction in resource use

CHAPTER-II:PRE-AUDIT

Introduction on green auditing

The systematic identification, quantification, recording, reporting and analysis of components of environmental diversity is called Green Audit. The main aim of 'Green Audit' is to analyze environmental practices within the college campus, which will have an impact on the eco-friendly ambience. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit.

Pre-auditing report

A pre-audit meeting was held on during in our college campus. It gives an opportunity to gather documentation that the audit team can study before arriving on the site. The audit protocol and audit plan was handed over at this meeting and discussed in advance of the audit itself. The meeting provided an opportunity to reinforce the scope and objectives of the audit and discussions were held on the practicalities associated with the audit. The committee is decided to audit different areas like water management, energy management, waste management, management of hazardous materials etc.in our college campus.

Our Management has shown great interest and dedication towards green auditing during the pre-audit meeting. They encouraged all green activities such as awareness programmes on waste management, clean and green campus, minimization of e-waste and planting more trees on the campus etc. The management of the college will formulate policies based on the green auditing report. The management commitment is an indicator which addresses institutional commitment, governance, and investment policy. College administration is vital to the process of realizing campus sustainability, and college policy is an essential instrument for any substantial change in the campus environment.

Areas of green auditing

The study area includes degree college campus, botanical garden with 1 acres, intermediate block garden, college canteen, lawn, ground, PG block garden and etc. The study area was situatedbytheCo-ordinates**016º42'25.95"N,081º05'12.83"E;016º42'20.79"N081º04'9.5"E**The study area is very much eco-friendly of the Eluru Urban area and rich in trees and biodiversity. TheDepartmentofBotanyismaintainingaBotanicalgardenof1.5acres.Inthisgardenwearemaintaining medicinal plants, floriculture plants and pomology. Plants are grown here for Botanical studies as a part of academics for both intermediate and degree. In this context the Department is maintaining and monitoring almost 58 medicinal plants and 125 potted ornamental plants along with ferns and plants like orchids.

Methodology

Green auditing was conducted during 01-05- 2020 by our committee with the help teaching and non-teaching and NSS students. The green audit began to physical verification on different facilities at the college, determining the different types of appliances and utilities like lights, taps ,toilets, fridges, etc. as well as measuring the usage per item (Watts indicated on the appliance or measuring water from a tap) and identifying the relevant consumption patterns (such as how often an appliance isused) and the impact that they have.

For our study convenience the entire college was divided into 8 blocks. Botanical garden, Entrance, Ground, Inter block, Garden, Canteen, Office room ,PG Block, Gymnasium. Different audit groups interviewed office staff, Principal, Teaching and non-teaching staff, students,parents and other stakeholders of the college. Discussions were also made with the PTA office bearers to clarify doubts regarding certain points.Verified college documents such as admission registers,registers of electricity and water charge remittance, furniture register, laboratory equipment registers, purchase register, audited statements, and office registers. Collected college calendars, college magazines, annual report of the college and NAAC self-assessment reports, UGC report etc. The college and its premises were visited and analyzed by the audit-teams several times to gather information. Campus trees were counted and identified; play grounds, canteen, library, office rooms and parking grounds were also examined to collect data.

Finally discussions were made with the college management regarding their policies on environmental management.Future plans of the college were also discussed.

CHAPTER-III:ON SITE AUDIT OBSERVATIONS AND RECOMMENDATIONS

Auditing of Water management

Water is life, life without water can't imagine. After life gas oxygen, water component plays a vital role for beings. Our students and staff follow the best practice**"SAVE WATER-SAVE LIFE"**. Water, it is not only life; it is the backbone of economy of every country. Auditing of water management is an onsite survey which includes water sources, water consumption, irrigation, storm water, appliances and fixtures, and assessment to determine the water use and hence improving the efficiency of its use.

Observations

- ✓ The study observed that Well, Bore well and municipal irrigations are the two major sources of water.
- ✓ The data collected from all the departments is examined and verified and on an average the total use of water in the college is 25000 L/day, which include 7000 L/day for domestic purposes,12000L/day for gardening and 6000 L/day for different laboratories.
- ✓ Water is used for drinking purpose, canteen, toilets, laboratory and gardening.
- ✓ The students and staff use sufficient quantity of water and turned off taps immediately.
- ✓ College campus we have twenty five drinking water points, fifteen water points for hand wash and cleaning lunchboxes
- ✓ Seventy five urinal wash points and twenty five toilets.
- ✓ At most care is taken to flow water through pipes and reaches terminal points to fulfill our basic needs without any leakage
- ✓ Waste water is channeled into sock pits to improve ground water level.
- ✓ The waste water generated by RO Plant is being channelized into toilets.
- ✓ To make judicious use of water available, the college has installed several water sprinklers in garden areas.
- ✓ During the survey , no loss of water is observed, neither by any leakages, nor by overflow of water from over head tanks.

Recommendations

- Monitor and control of over flow is essential and supervision is essential periodically.
- Recycle of water system is necessary to reuse the waste water if any
- Minimize wastage of water and use of electricity during water filtration process, ,such as RO filtration process
- Ensure that all cleaning products used by college staff should be bio degradable and non-toxic.
- Install waste water system for chemistry labs
- Set up an efficient water recycling system in the college canteen
- Install rain two more water harvesting system
- Establish water, waste and energy management systems
- Increase the number of water taps and set up recycling of water system

Auditing of Energy

Auditing of Energy was taken up separately by the energy audit team (both Internal & External)addresses energy sources, energy monitoring, energy consumption, lighting, appliances and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

Auditing of Green Area

Plants produce oxygen and give shelter to organisms. They also used as medicines to cure various chronic diseases for animals and human beings. Plants produce wonderful therapeutic drugs to cure very dangerous and normal diseases. Here several scientists published number of research journals as theme medicinal uses of plants. Green are auditing includes plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps in ensuring that the Environmental Policy is enacted, enforced and reviewed using various environmental awareness programmes.

Observations

- Huge number of variety of tree so fage above 33 years is found in our college campus. Beautiful garden is being maintained in front of our college i.e. at the entrance.

- Botanical garden is being maintained at the Department of Botany which consists of lot of medicinal plants.
- Beautiful flower plants are planted either side of Pedestrian friendly roads.
- It was observed that, campus is located in the vicinity of approximately trees of different species, among them 65 are medicinal plants.
- Various tree plantation programs are being organized during the month of July and August at college campus through NSS unit which includes various type of indigenous species of ornamental and medicinal wild plant species.

FLORA OF SIR.C.R.REDDY COLLEGE FOR WOMEN

S.no	Scientific name	Common name	Family	Number of plants
1	Ixora coccinia(alba)	Nuruvrahalu (whiteflowers)	Rubeacea	5
2	Ixora coccinia	Nuruvarahalu (orange)	Rubeacea	8
3	Laurusnovluis	Ganneru (gardenjasmine)	Apocynaceae	3
4	Polyalthialomgifolia	Naramamidi		19
5	Ixora	Nuruvarahalu (yellow)	Rubeacea	6
6	Arecapalm	Butterflypalm	Arecaceae	18
7	Agaveinaquidence	Uneventeeth	Asparagaceae	5
8	ToxicaDendronvernix	Thunderwood	Anacardeacea	1
9	Phylanthusemblica	Amla	Phyalanthaceae	4
10	Aglaonemapictum	Artificialplant		27
11	Ixora	Nuruvarahalu (pink)	Rubeacea	2
12	Annonareticulata	Ramafalam	Annonaceae	4
13	Hibiscusrosasinensis	hibiscus	malvaceae	5
14	Ixora	Dwarfixora	Rubeacea	134

15	Neriumindica	Ganneru (lightpinkflower)	Apocynaceae	38
16	Azadiraktaindica	Neem	Meliaceae	44
17	Bouganvilliaglabra	Paper flowers (pink)	Nictangiaceae	15
18	Bouganvillia	Paper flower (yellow)	Nictangiaceae	1
19	Ponagamiapinnata	ganuga	Fabaceae	12
20	Cocusneucifera	Coconut	Arecaceae	33
21	Tectonagrandis	Teak	Verbinaceae	24
22	Pentophorum pterocartus	Copperpod	Fabaceae	25
23	Albizzialebbeck	Sirishflowers	Fabaceae	3
24	Mussaenda queenskit	Ornamental redleaves	Rubeacea	9
25	Bouganvillia	Paperflowers (orange)	Nictangiaceae	1
26	Calotropisgigantia	Jilledu	Apocynaceae	9
27	Neriumoleander	Nerium	Apocynaceae	24
28	Liriopemuscari(chlophytum comosum)	Spiderplant	Asparagaceae	42
29	Durantarepense	Sky flower ,pigeonbeery	verbinaceae	56
30	Catharanthus roses(Alba)	Billaganneru	Apocynaceae	8
31	Mangiferindica	mango	Anacardiaceae	16
32	Ficusreligiosa	Ravi	Moraceae	9
33	Manikarazapota	sapota	Sapotaceae	9
34	Eucalyptus	Jamayel	Mytaceae	1
35	Tamrindusindica	Tamarindplant	Fabaceae	1
36	Psidiumguava	Jama	Mytaceae	10

37	Musaparadisiacal	Banana	Musaseae	10
38	Pterocarpussantalinus	Redsanders	Fabaceae	5
39	Gossypiumherbaceum	Cotton	Malvaceae	1
40	Citruslimon	Lemon	Rutaceae	1
41	Tecomastands	Ganneru	Dignoniaceace	3
42	Hameliapatens	Firebush,redhead	Rubeacea	6
43	Punicagrantem	Pomogranete	Punicaceae	2
44	Lawsoniainnermis	Hennaplant	Lythraceae	2
45	Dalbargiasisso	Rosewood	Fabaceae	4
46	Bauhiniaequminata	Bauhinia plant(Alba)	Fabaceae	8
47	Sapindussabonaria	Soapnut plant	Sapindaceae	2
48	Gardeniataitensis	Tiareflower	Rubeacea	1
49	Calycophyllum condissimum	Lemonwood	Rubeacea	1
50	Anonasquamosa	Custardapple	Annonaceae	2
51	Embicaofficinalis	Gooseberry	Phylanthaceae	3
52	Syzygiumcumini	Malabalpalm,javapalm	mytaceae	4
53	Ficuselastica	Rubbertree	moraceae	3
54	Jasminumauriculatum	Chukkamalli	oleaceae	1
55	Artabotryshexapetalus	Boddusampangi	annonaceae	1
56	Cycasbeddomi	cycas	cycadaceae	1
57	Murryakoynegi	Curryleaf	rutaceae	4

58	Cinnamomumzy lanicum	Dhalchinachekka	Lauraceae	2
59	Laurusnobilis	Bayleaf	Lauraceae	2
60	Cardamomzylanicum	Elachi	Zinzgibeaceae	2
61	Rauwolfia serpentina	Seven leavespl ant	Apocynaceae	

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TOATLPLANTS=801

Recommendations

- Planting of trees in every year in the campus
- Set up a nursery for plants to be distributed to the students
- Set up vegetable and medicinal plant gardens
- Reviews periodically the list of trees planted in the garden, allot numbers to the trees and keep records. Give scientific names to the trees.
- Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service.
- Create awareness of environmental sustainability and take sactions to ensure environmental sustainability.
- Establish a College Environmental Committee that will hold responsibility for the enactment, enforcement and review of the Environmental Policy. The Environmental Committee shall be the source of advice and guidance

Auditing of waste management

Waste production and disposal, plastic waste, paper waste, food waste and recycling comes under auditing of waste management. Solid waste has a number of adverse environmental impacts, most of which are well known andnot in need of elaboration. Solid waste can be divided in to two categories: general waste and hazardous waste. General waste includes what is usually thrown away in class rooms and roads such as paper, plastic stins and glass bottles. Hazardous waste is waste that is likely to be a threat to one' shealth or the environment like cleaning chemical sand petrol.

Observations

- The possible ways of generation of solid waste in our college campus are from plants dry leafs, grass, food stuff, paper, glass, plastic, use and through pens, single use water bottles, water packets, single use polybags, electrical, electronic and packing materials ect. The total solid wastecollectedinthecampusis50Kg/day
- Early in the morning sweepers sweep the campus to make it clean and neat, during the process they collect and then separate the whole solid waste into biodegradable solid waste (plants dry leafs, grass, food stuff, paper), plastic and polymer waste (plastic, use and through pens, single use water bottles, water packets, single use poly bags) and electrical &electronic(e-waste)
- The biodegradable waste (except paper)is transferred to the Vermi-Compost unit maintained by the Departments of Zoology and Botany. In the duration of one and half month approximately 250 kgs of vermi-compost can be produced and is used as organic manure for plants in our college campus
- Paper waste in any form is collected and separated carefully, stored in bags and finally transferred to paper recycling unit
- Singlesidedusedpapersreusedforwritingandprintinginalldepartments
- Verylessplasticwasteisgeneratedbysomedepartments,office,gardenetcbutit isneithercategorizedatpointsourcenorsentforrecycling
- Metalwasteandwoodenwasteisstoredandgiventoauthorizedscrapagentsforf urtherprocessing
- Segregationofchemicalwastegeneratedinchemistryandzoologylaborat oriesisalsopracticed
- Few glass bottles are re used in the laboratories

Recommendations

- Set up a common waste water treatment plant
- Installation of more vermiculture and compost units
- Adopt an environment policy for the college
- Establish an e-waste collection centre
- Participation of students and teachers in local environmental issues
- Conduct seminars and workshops on environmental education
- Avoid plastic plates and plastic items in the college functions
- Introduce UGC environmental science course to all students
- Declarethecampusplasticfreeandarrangeawarenessprogrammestomakethe campus plastic free

Auditing of E-Waste Generation

E-waste can be described as consumer and business electronic equipment that is near or at the end of its useful life. This makes up about5% of all municipal solid waste worldwide but is much more hazardous than other waste because electronic components contain cadmium, lead, mercury, and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.

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- The E- waste and defective item from computer laboratory is being stored properly
- The institution has decided to contact approved E-waste management and disposal facility in order to dispose E-waste in scientific manner

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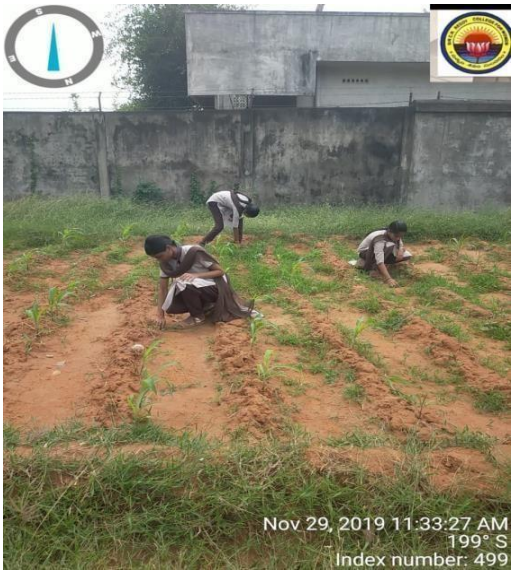
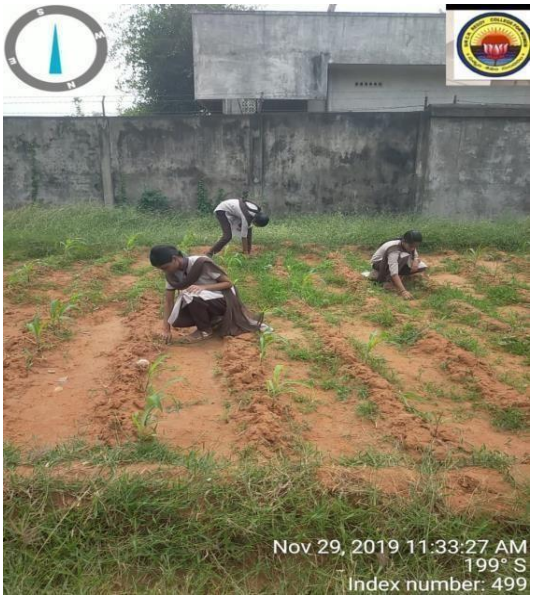
BOTANICAL GARDEN MAINTENANCE BY STUDENTS

Watering the plants by students





Students removing weeds from mize plantation

SOME OF MEDICINAL PLANTS IN BOTANY GARDEN

Murrayakoengii(CurryLeaf)

Calotropisprocera(Zilledu)

Asparagus officinallis

Conclusions

Green audit or environmental audit should be implemented strictly. It is a continuous process. Management, administrative staff, teaching &non teaching staff and stakeholders should understand the process of environmental auditing, importance and impact of green auditing. Though academic institutes take part in restoring the environment, still there is scope for the fur the raction.

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GREEN AUDIT REPORT

2018-2019

Prepared by

DEPARTMENT OF BOTANY

SIR C. R. REDDY COLLEGE FOR WOMEN,ELURU

Affiliated to ADIKAVI NANNAYA UNIVERSITY (Rajamahendravaram)

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Auditing of waste management

Auditing of E-Waste Generation

CHAPTER-IV: POST AUDIT REPORT

CONCLUSIONS

ACKNOWLEDGEMENTS

INTERNAL AUDIT TEAM

1. Smt. P.SAILAJA	PRINCIPAL
2. S.ANURADHA	IQAC COORDINATOR
3. B.TULASI KOTESWARI BAI	HOD, DEPT.OF CHEMISTRY
4. G.SUSHMA	LECTURER IN BOTANY

EXTERNAL AUDIT TEAM

1. G. VENKATA RATNAM	ZONAL OFFICER IN ORGANIC FORMING, NACHUGUNTA
2. B. RAMAKRISHNA RAO	FIELD OFFICER
3. B.BHUPATHI RAJU	FIELD OFFICE

ENVIRONMENT AUDIT CERTIFICATE

This is to certify that

Sir C. R. Reddy College for Women

has successfully undergone and the Environmental Audit and meet the standards during the Green Audit 2018-2019

Approved by

Dr. Sunkavalli
Govyavasaya Vignana Samithi,
Nachugunta.

06.05.2019
Date

G. Venkata Ratnam.
Signature
Dr. SUNKAVALLI GOVYAVASAYA
VIJNANA SAMITHI
NACHUGUNTA,
Vinukonda Mandal, Guntur District.

CHAPTER-I: INTRODUCTION

About College

Eluru, the district headquarters of west Godavari is known for its historical background and as as center for educational institutions.The fore most Institution is Sir C Ramalinga Reddy College,located in sprawling campuses of about 100 Acces area administered by a trust consisting of nearly 300 members. It is a service oriented organization working on Non- profit Basis, giving importance to discipline,hard work and to work only for the development of the students both technically and morally

Trust members include many Educationalists, Industrialists and reputed politicians and statesmen who offer constantly moral and financial support.Sri. Mullapudi harischandra Prasad,Smt.Rajeswari Rama chandran ,the famous industrialist , Late Sri.L.V.Prasadha Rao (U.S.A),Sri S B P K Satyanarayana Rao Former union minister (M.P),Sri Bolla Ramayya (M.P), Late Sri. Maganti Ravindranath Chowdhury Former minister Govt of A.P. etc., Are among them .Sri Alluri Bapineedu former president of the educational society remains a Legendary figure in the development of the institution.

Sir. C.R R College society (Regt.No.10 of 1950) promoted an arts and science college which was inaugurated on 4th July 1945 by Sir cattamanchi Rama Linga Reddy the distinguished Educationalist andthe then Vice Chancellor of Andhra University.

Aim and Objectives of Green Audit

Clean and Green environment is a healthy environment. Any person can feel comfort, pleasant and peace of mind in clean and green environment, therefore teaching and learning is effective and provides a stress less learning environment. Green auditing is one among the various efforts around the world to address environmental education issues. Once a baseline is established, the data can serveas a point of departure for further action in campus greening. The main aim of the green audit is to study ground reality of different issues regarding environment such as water and power conservation, waste management, and clean & green in the campus. The main objective of the green audit is to promote the environment, management and conservation in the college campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The main objectives of carrying out Green Audit are

- To recognize, diagnose and resolve the environmental problems and secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus
- To minimize the consumption of water and energy consumption and provide baseline information to enable organization to evaluate and manage environmental change, threat and risk.
- To train all stakeholders of the organization and empower them to contribute and participate in the environmental protection and facilitate them with different aspects of disaster management
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requires high cost
- To identify the risks of hazards and implement the policies for safety of stakeholders and to set up procedure for disposal of all types of harmful wastes
- To bring out a status report on environmental compliance

Advantages of the Green Auditing

- To maintain greenery in campus
- To facilitate waste management through reduction of waste generation, solid- waste and water recycling
- To create plastic free campus
- To bring awareness in health consciousness among the stakeholders
- To provide a basis for improved sustainability
- To instruct environmental education through systematic environmental management approach and Improving environmental standards
- Financial savings through a reduction in resource use

CHAPTER-II: PRE-AUDIT

Introduction on green auditing

The systematic identification, quantification, recording, reporting and analysis of components of environmental diversity is called Green Audit. The main aim of 'Green Audit' is to analyze environmental practices within the college campus, which will have an impact on the eco-friendly ambience. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit.

Pre-auditing report

A pre-audit meeting was held on 06-05-2019 in our college campus. It gives an opportunity to gather documentation that the audit team can study before arriving on the site. The audit protocol and audit plan was handed over at this meeting and discussed in advance of the audit itself. The meeting provided an opportunity to reinforce the scope and objectives of the audit and discussions were held on the practicalities associated with the audit. The committee is decided to audit different areas like water management, energy management, waste management, management of hazardous materials etc. in our college campus.

Our Management has shown great interest and dedication towards green auditing during the pre-audit meeting. They encouraged all green activities such as awareness programmes on waste management, clean and green campus, minimization of e-waste and planting more trees on the campus etc. The management of the college will formulate policies based on the green auditing report. The management commitment is an indicator which addresses institutional commitment, governance, and investment policy. College administration is vital to the process of realizing campus sustainability, and college policy is an essential instrument for any substantial change in the campus environment.

Areas of green auditing

The study area includes degree college campus, botanical garden with 1 acres, intermediate block garden, college canteen, lawn, ground, PG block garden and etc. The study area was situated by the Co-ordinates **016º 42' 25.95"N, 081º 05' 12.83"E ; 016º 42' 20.79"N 081º 04' 9.5"E** The study area is very much eco-friendly of the Eluru Urban area and rich in trees and biodiversity. The Department of Botany is maintaining a Botanical garden of 1.5 acres. In this garden we are maintaining medicinal plants, floriculture plants and pomology. Plants are grown here for Botanical studies as a part of academics for both intermediate and degree. In this context the Department is maintaining and monitoring almost 58 medicinal plants and 125 potted ornamental plants along with ferns and plants like orchids.

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Methodology

Green auditing was conducted during 16-05-2019 by our committee with the help teaching and non-teaching and NSS students. The green audit began to physical verification on different facilities at the college, determining the different types of appliances and utilities like lights, taps, toilets, fridges, etc. as well as measuring the usage per item (Watts indicated on the appliance or measuring water from a tap) and identifying the relevant consumption patterns (such as how often an appliance is used) and the impact that they have.

For our study convenience the entire college was divided into 8 blocks. Btanical garden, Entrance, Ground, Inter block, Garden, Canteen, Office room , PG Block,Gymnasium. Different audit groups interviewed office staff, Principal, Teaching and non-teaching staff, students, parents and other stakeholders of the college. Discussions were also made with the PTA office bearers to clarify doubts regarding certain points. Verified college documents such as admission registers, registers of electricity and water charge remittance, furniture register, laboratory equipment registers, purchase register, audited statements, and office registers. Collected college calendars, college magazines, annual report of the college and NAAC self-assessment reports, UGC report etc. The college and its premises were visited and analyzed by the audit-teams several times to gather information. Campus trees were counted and identified; play grounds, canteen, library, office rooms and parking grounds were also examined to collect data.

Finally discussions were made with the college management regarding their policies on environmental management. Future plans of the college were also discussed.

CHAPTER-III: ONSITE AUDIT OBSERVATIONS AND RECOMMENDATIONS

Auditing of Water management

Water is life, life without water can't imagine. After life gas oxygen, water component plays a vital role for beings. Our students and staff follow the best practice **"SAVE WATER-SAVE LIFE"**. Water, it is not only life; it is the backbone of economy of every country. Auditing of water management is an onsite survey which includes water sources, water consumption, irrigation, storm water, appliances and fixtures, and assessment to determine the water use and hence improving the efficiency of its use.

Observations

- ✓ The study observed that Well, Bore well and municipal irrigations are the two major sources of water.
- ✓ The data collected from all the departments is examined and verified and on an average the total use of water in the college is 25000 L/day, which include 7000 L/day for domestic purposes, 12000 L/day for gardening and 6000 L/day for different laboratories.
- ✓ Water is used for drinking purpose, canteen, toilets, laboratory and gardening.
- ✓ The students and staff use sufficient quantity of water and turned off taps immediately.
- ✓ College campus we have twenty five drinking water points, fifteen water points for hand wash and cleaning lunch boxes
- ✓ Seventy five urinal wash points and twenty five toilets.
- ✓ At most care is taken to flow water through pipes and reaches terminal points to fulfill our basic needs without any leakage
- ✓ Waste water is channeled into sock pits to improve ground water level.
- ✓ The waste water generated by RO Plant is being channelized into toilets.
- ✓ To make judicious use of water available, the college has installed several water sprinklers in garden areas.
- ✓ During the survey, no loss of water is observed, neither by any leakages, nor by over flow of water from overhead tanks.

Recommendations

- Monitor and control of overflow is essential and supervision is essential periodically.
- Recycle of water system is necessary to reuse the waste water if any
- Minimize wastage of water and use of electricity during water filtration process, if used, such as RO filtration process
- Ensure that all cleaning products used by college staff should be biodegradable and non-toxic.
- Install waste water system for chemistry labs
- Set up an efficient water recycling system in the college canteen
- Install rain two more water harvesting system
- Establish water, waste and energy management systems
- Increase the number of water taps and set up recycling of water system

Auditing of Energy

Auditing of Energy was taken up separately by the energy audit team (both Internal & External) addresses energy sources, energy monitoring, energy consumption, lighting, appliances and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

Auditing of Green Area

Plants produce oxygen and give shelter to organisms. They also used as medicines to cure various chronic diseases for animals and human beings. Plants produce wonderful therapeutic drugs to cure very dangerous and normal diseases. Here several scientists published number of research journals as the medicinal uses of plants. Green area auditing includes plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps in ensuring that the Environmental Policy is enacted, enforced and reviewed using various environmental awareness programmes.

Observations

- Huge number of variety of trees of age above 33 years is found in our college campus. Beautiful garden is being maintained in front of our college i.e. at the entrance.

- Botanical garden is being maintained at the Department of Botany which consists of lot of medicinal plants.
- Beautiful flower plants are planted either side of Pedestrian friendly roads.
- It was observed that, campus is located in the vicinity of approximately trees of different species, among them 65 are medicinal plants.
- Various tree plantation programs are being organized during the month of July and August at college campus through NSS unit which includes various type of indigenous species of ornamental and medicinal wild plant species.

FLORA OF SIR.C.R.REDDY COLLEGE FOR WOMEN

S.no	Scientific name	Commo nname	Family	Number ofplants
1	Ixora coccinia(alba)	Nuruvrahalu (white flowers)	Rubeacea	5
2	Ixora coccinia	Nuruvarahalu (orange)	Rubeacea	8
3	Laurus novluis	Ganneru (garden jasmine)	Apocynaceae	3
4	Polyalthia lomgifolia	Naramamidi		19
5	Ixora	Nuruvarahalu (yellow)	Rubeacea	6
6	Areca palm	Butterfly palm	Arecaceae	18
7	Agave inaquidence	Uneven teeth	Asparagaceae	5
8	Toxica Dendron vernix	Thunder wood	Anacardeacea	1
9	Phylanthus emblica	Amla	Phyalanthaceae	4
10	Aglaonema pictum	Artificial plant		27
11	Ixora	Nuruvarahalu (pink)	Rubeacea	2
12	Annona reticulata	Ramafalam	Annonaceae	4
13	Hibiscus rosa sinensis	hibiscus	malvaceae	5
14	Ixora	Dwarf ixora	Rubeacea	134

15	Nerium indica	Ganneru (light pink flower)	Apocynaceae	38
16	Azadi rakta indica	Neem	Meliaceae	44
17	Bouganvillia glabra	Paper flowers (pink)	Nictangiaceae	15
18	Bouganvillia	Paper flower (yellow)	Nictangiaceae	1
19	Ponagamia pinnata	ganuga	Fabaceae	12
20	Cocus neuc ifera	Coconut	Arecaceae	33
21	Tectona grandis	Teak	Verbinaceae	24
22	Pentophorum pterocartus	Copper pod	Fabaceae	25
23	Albizzia lebbeck	Sir ish flowers	Fabaceae	3
24	Mussaenda queen skit	Ornamental red leaves	Rubeacea	9
25	Bouganvillia	Paper flowers (orange)	Nictangiaceae	1
26	Calotropis gigantia	Jilledu	Apocynaceae	9
27	Nerium oleander	Nerium	Apocynaceae	24
28	Liriope muscari (chlophytum comosum)	Spider plant	Asparagaceae	42
29	Duranta repense	Sky flower , pigeon beery	verbinaceae	56
30	Catharanthus roses (Alba)	Billa ganneru	Apocynaceae	8
31	Mangifer indica	mango	Anacardiaceae	16
32	Ficus religiosa	Ravi	Moraceae	9
33	Manikara zapota	sapota	Sapotaceae	9
34	Eucalyptus	Jamayel	Mytaceae	1
35	Tamrindus indica	Tamarind plant	Fabaceae	1
36	Psidium guava	Jama	Mytaceae	10

37	Musa paradisiacal	Banana	Musaseae	10
38	Pterocarpus santalinus	Red sanders	Fabaceae	5
39	Gossypium herbaceum	Cotton	Malvaceae	1
40	Citrus limon	Lemon	Rutaceae	1
41	Tecoma stands	Ganneru	Dignoniaceace	3
42	Hamelia patens	Fire bush, red head	Rubeacea	6
43	Punica grantem	Pomogranete	Punicaceae	2
44	Lawsonia innermis	Henna plant	Lythraceae	2
45	Dalbargia sisso	Rose wood	Fabaceae	4
46	Bauhinia equminata	Bauhinia plant (Alba)	Fabaceae	8
47	Sapindus sabonaria	Soap nut plant	Sapindaceae	2
48	Gardenia taitensis	Ti are flower	Rubeacea	1
49	Calycophyllu m condissimum	Lemon wood	Rubeacea	1
50	Anona squamosa	Custard apple	Annonaceae	2
51	Embica officinalis	Goose berry	Phylanthaceae	3
52	Syzygium cumini	Malabal palm, java palm	mytaceae	4
53	Ficus elastica	Rubber tree	moraceae	3
54	Jasminum auriculatum	Chukka malli	oleaceae	1
55	Artabotrys hexa petalus	Boddu sampangi	annonaceae	1
56	Cycas beddomi	cycas	cycadaceae	1
57	Murrya koynegi	Curry leaf	rutaceae	4

58	Cinnamomum zylanicum	Dhalchina chekka	Lauraceae	2
59	Laurus nobilis	Bay leaf	Lauraceae	2
60	Cardamom zylanicum	Elachi	Zinzgibeaceae	2
61	Rauwolfia serpentina	Seven leaves plant	Apocynaceae	

TOATL PLANTS=801

Recommendations

- Planting of trees in every year in the campus
- Set up a nursery for plants to be distributed to the students
- Set up vegetable and medicinal plant gardens
- Reviews periodically the list of trees planted in the garden, allot numbers to the trees and keep records. Give scientific names to the trees.
- Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service.
- Create awareness of environmental sustainability and takes actions to ensure environmental sustainability.
- Establish a College Environmental Committee that will hold responsibility for the enactment, enforcement and review of the Environmental Policy. The Environmental Committee shall be the source of advice and guidance

Auditing of waste management

Waste production and disposal, plastic waste, paper waste, food waste and recycling comes under auditing of waste management. Solid waste has a number of adverse environmental impacts, most of which are well known and not in need of elaboration. Solid waste can be divided into two categories: general waste and hazardous waste. General waste includes what is usually thrown away in class rooms and roads such as paper, plastics tins and glass

bottles. Hazardous waste is waste that is likely to be a threat to one's health or the environment like cleaning chemicals and petrol.

Observations

- The possible ways of generation of solid waste in our college campus are from plants dry leafs, grass, food stuff, paper, glass, plastic, use and through pens, single use water bottles, water packets, single use poly bags, electrical, electronic and packing materials ect. The total solid waste collected in the campus is 50 Kg/day
- Early in the morning sweepers sweep the campus to make it clean and neat, during the process they collect and then separate the whole solid waste into biodegradable solid waste (plants dry leafs, grass, food stuff, paper), plastic and polymer waste (plastic, use and through pens, single use water bottles, water packets, single use poly bags) and electrical & electronic (e-waste)
- The biodegradable waste (except paper) is transferred to the Vermi-Compost unit maintained by the Departments of Zoology and Botany. In the duration of one and half month approximately 250 kgs of vermi-compost can be produced and is used as organic manure for plants in our college campus
- Paper waste in any form is collected and separated carefully, stored in bags and finally transferred to paper recycling unit
- Single sided used papers reused for writing and printing in all departments
- Very less plastic waste is generated by some departments, office, garden etc but it is neither categorized at point source nor sent for recycling
- Metal waste and wooden waste is stored and given to authorized scrap agents for further processing
- Segregation of chemical waste generated in chemistry and zoology laboratories is also practiced
- Few glass bottles are reused in the laboratories

Recommendations

- Set up a common waste water treatment plant
- Installation of more vermi culture and compost units
- Adopt an environment policy for the college

- Establish an e-waste collection centre
- Participation of students and teachers in local environmental issues
- Conduct seminars and workshops on environmental education
- Avoid plastic plates and plastic items in the college functions
- Introduce UGC environmental science course to all students
- Declare the campus plastic free and arrange awareness programmes to make the campus plastic free

Auditing of E-Waste Generation

E-waste can be described as consumer and business electronic equipment that is near or at the end of its useful life. This makes up about 5% of all municipal solid waste worldwide but is much more hazardous than other waste because electronic components contain cadmium, lead, mercury, and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.

Observations

- E-waste generated in the campus is very less in quantity
- E-waste includes discarded parts of electrical & electronic equipment such as parts of computer, printer, copier machine, burned electric bulbs, wires and any outdated machines
- The E- waste and defective item from computer laboratory is being stored properly
- The institution has decided to contact approved E-waste management and disposal facility in order to dispose E-waste in scientific manner

Recommendations

- Conduct seminars and workshops on environmental education
- Avoid plastic plates and plastic items in the college functions
- Introduce UGC environmental science course to all students
- Purchase of college bus exclusively for college students

CHAPTER-IV: POST AUDIT REPORT

1. Green auditing should be conducted by the College in every two years. College should also offer consultancy projects on environmental auditing for other academic and research institutions
2. Irrespective of the academic programmes, environmental education should be part of curriculum and for the under-graduate programmes, at least one credit on environmental education or sustainable development as elective should be made compulsory
3. Rainwater harvesting facilities may be established at both administrative and academic campuses, foreseeing future needs of water. Rainwater pits can be prepared at appropriate places identified with the assistance of Department of Geology and restoration activities may be initiated to sustain the health of ponds and wetlands in the campus
4. Specific waste management plans should be adopted to manage solid waste in the campus, with the assistance of State Suchithwa Mission and use of plastic carry bags, thermocole cups/plates and flex boards should be banned inside the college.
5. For managing organic wastes, biogas plants may be commissioned at the hostels, canteens, biochemistry department and staff quarters.
6. All the blocks in the Campus should develop a garden in front of the building and the expenditure for the same may be met from the College Development Fund.
7. Green habitat concept should be adopted for all the building construction activities of the college in future. Further, more green spaces should be established all around the campus around larger trees and shades for the benefit of the students.
8. Fire safety instruments should be installed in all the buildings.
9. More public toilets/e-toilets may be established in the campus and in hostels; separate toilets are required for differently abled students.
10. Considering contamination of water with coliform bacteria, water purification treatment facilities may be installed within the campus in order to ensure safe drinking water.

BOTANICAL GARDEN MAINTAINED BY THE STUDENTS

Removing weeds by students

Maintenance of maize plantations

watering to plants by students

SOME OF MEDICINAL PLANTS IN BOTANY GARDEN

Murraya koengii (Curry Leaf)

Calotropis procera (Zilledu)

Cymbopagon citratus

Origanum majorana

Conclusions

Green audit or environmental audit should be implemented strictly. It is a continuous process. Management, administrative staff, teaching & non teaching staff and stakeholders should understand the process of environmental auditing, importance and impact of green auditing. Though academic institutes take part in restoring the environment, still there is scope for the further action.

Acknowledgements

The audit committee sincerely thanks the principal, vice principal and IQAC coordinator for their support in entire onsite auditing. We are thankful to head of the departments and college staff for providing us necessary facilities and co-operation during the audit. We are also very much thankful to all office staff for providing required data time to time which helped very much in making the audit, a success.

INTERNAL AUDIT TEAM			
S. No	**Name**	**Designation**	**Signature**
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2	S.Anuradha	Coordinator, IQAC	
4	B.Tulasi Koteswari Bai	HOD, Dept. of Chemistry	
5	G.Sushma	Lecturer in Botany	

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Principal
Sir C.R.Reddy College for Women
ELURU

EXTERNAL AUDIT TEAM			
S. No	**Name**	**Designation**	**Signature**
1	**G.VENKATA RATNAM**	ZONAL OFFICER IN ORGANIC FORMING,NACHUGUNTA	G. Venkata Ratnam.
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